PIONEER
The Art of Entertainment

Service Manual

ORDER NO.
RRV1380

CD CDV LD PLAYER

CLD-S280
CLD-S180

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model		Power Requirement	Remarks
	CLD-S280	CLD-S180		
TD	O	O	AC110 – 240V	
TD/CN	O	–	AC110 – 240V	
TL	O	–	AC110 – 240V	

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PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE, INC. P.O.Box 1760, Long Beach, CA 90801-1760, U.S.A.
PIONEER ELECTRONIC [EUROPE] N.V. Haven 1087, Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE. LTD. 501 Orchard Road, #10-00 Lane Crawford Place, Singapore 0923

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1. EXPLODED VIEWS, PACKING AND PARTS LIST

NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *Parts list without notice are common for CLD – S280/TD, TD/CN, TL and CLD – S180/TD*

1.1 PACKING

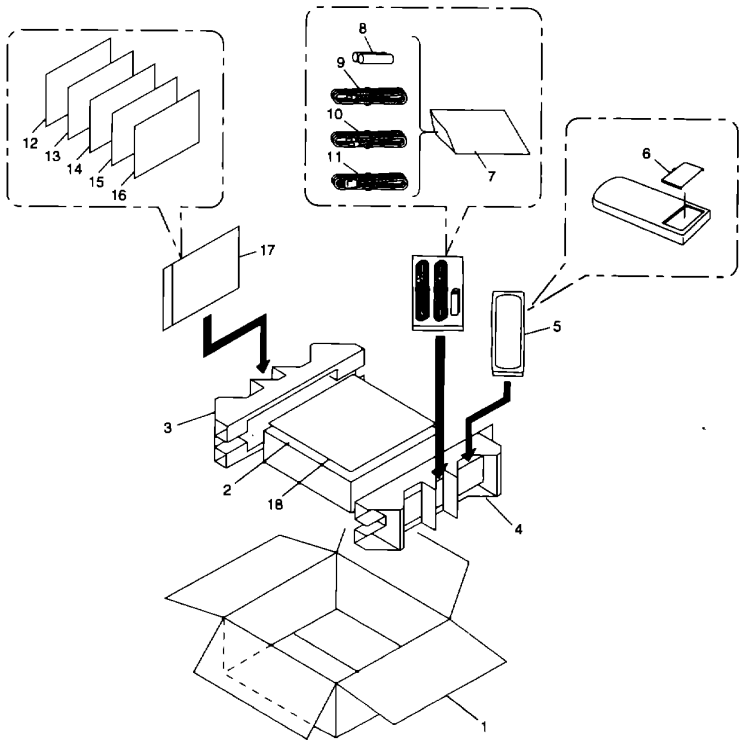
(1) CONTRAST OF CLD-S280/TD, TD/CN, TL AND CLD-S180/TD .

- CLD-S280/TD, TD/CN, TL and CLD-S180/TD have the same construction except for the following:

Mark	No.	Symbol & Description	Part No.			
			CLD-S280/TD	CLD-S280/TD/CN	CLD-S280/TL	CLD-S180/TD
⚠	1	Packing case	VHG1524	VHG1539	VHG1538	VHG1523
	11	AC power code	ADG1158	ADG1158	ADG1127	ADG1158
	14	Operating instructions (English/Chinese/Spanish/Portuguese)	VRG1004	VRG1004	VRG1004	Not used
	15	Operating instructions(Spanish/Portuguese)	VRD1050	Not used	Not used	VRD1050

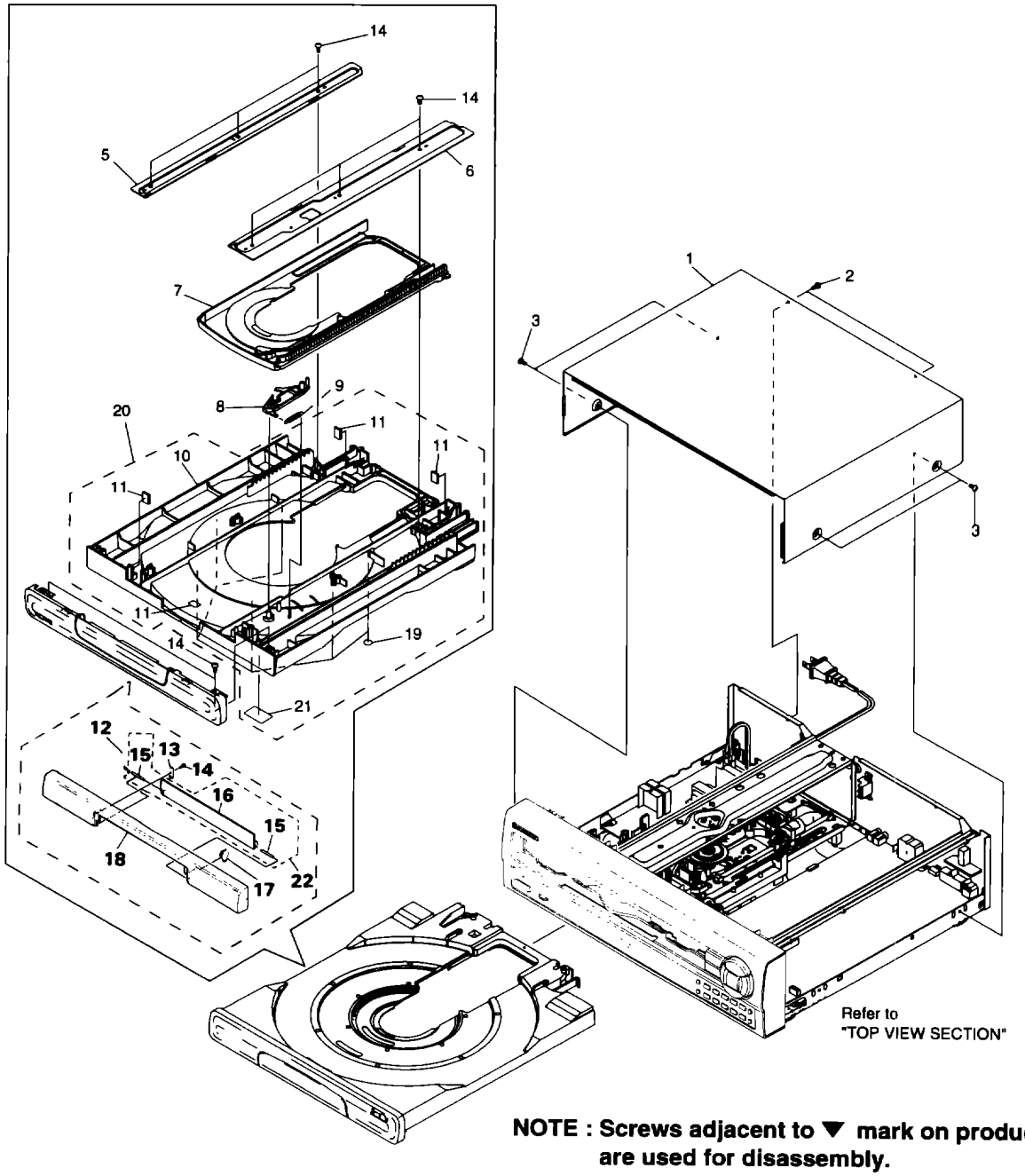
(2) PARTS LIST FOR CLD-S280/TD

Mark	No.	Description	Parts No.
	1	Packing case	VHG1524
	2	Mirror mat sheet	Z23 – 007
	3	Protector L	VHB1026
	4	Protector R	VHB1031
	5	Remote control unit	VXX2115
	6	Battery cover	VNK2806
	7	Polyethylene bag(205×315×0.05)	Z21 – 038
NSP	8	Battery (R6P, AA)	VEM – 013
	9	Video cord	VDE1034
	10	Audio cord	VDE1033
⚠	11	AC power code	ADG1158
NSP	12	Warranty card	ARW1020
	13	Operating instructions(English)	VRB1167
	14	Operating instructions (English/Chinese/Spanish/Portuguese)	VRG1004
	15	Operating instructions(Spanish/Portuguese)	VRD1050
	16	Operating instructions(Chinese)	VRD1043
NSP	17	Polyethylene bag	VHL – 014
	18	Spacer	VHB1040



1.2 EXTERIOR AND DISC TRAY SECTION

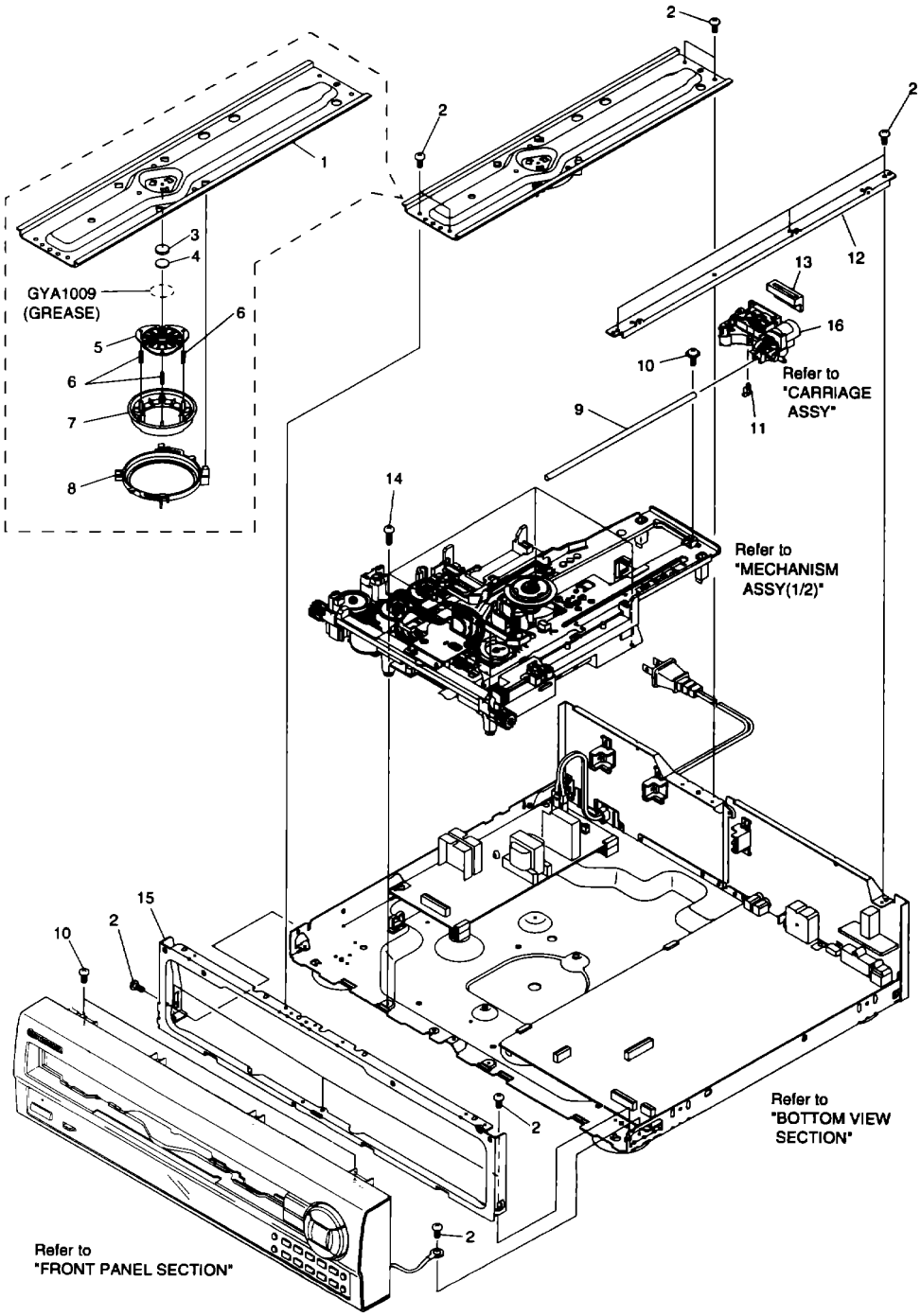
Mark	No.	Description	Parts No.
	1	Bonnet – S	VXX2117
	2	Screw	BBZ30P080FMC
	3	Screw	BCZ40P060FZK
	4	.....	
	5	Guide plate (R)	VNE1939
	6	Guide plate (L)	VNE1938
	7	CD tray	VNK3007
	8	Lock plate	VNL1703
	9	Lock plate spring	VBH1188
NSP	10	LD tray	VNK3188
	11	Damp cushion	VEC1683
	12	Door spring	VBH1248
	13	Door holder	VNL1697
	14	Screw	BBZ30P080FMC
NSP	15	Door shaft	VLL1466
NSP	16	CD door	VNK3316
	17	Damper ASSY	VXA1999
	18	Tray panel	VNK3315
	19	Cushion	VEC1682
	20	Tray ASSY-S	VXX2309
NSP	21	Label	VRW1289
	22	CD door ASSY	VXA2237



NOTE : Screws adjacent to ▼ mark on product are used for disassembly.

1.3 TOP VIEW SECTION

Mark	No.	Description	Parts No.
	1	Clamper arm	VNE1940
	2	Screw	BBZ30P080FMC
	3	Rubber mat	VEB1114
	4	Thrust holder	VNL1663
	5	Clamper head	VNL1649
	6	Clamp spring	VBH1192
	7	Clamper	VNL1648
	8	Clamper holder	VNL1636
	9	Shaft	VLL1481
	10	Screw	IBZ30P080FMC
	11	CA hook	VNL1698
NSP	12	PCB holder	VNE2034
	13	FFC holder	VNL1706
	14	Screw	BBZ30P100FMC
NSP	15	Panel holder	VNA1464
	16	Carriage ASSY	VWT1110



1.4 FRONT PANEL SECTION

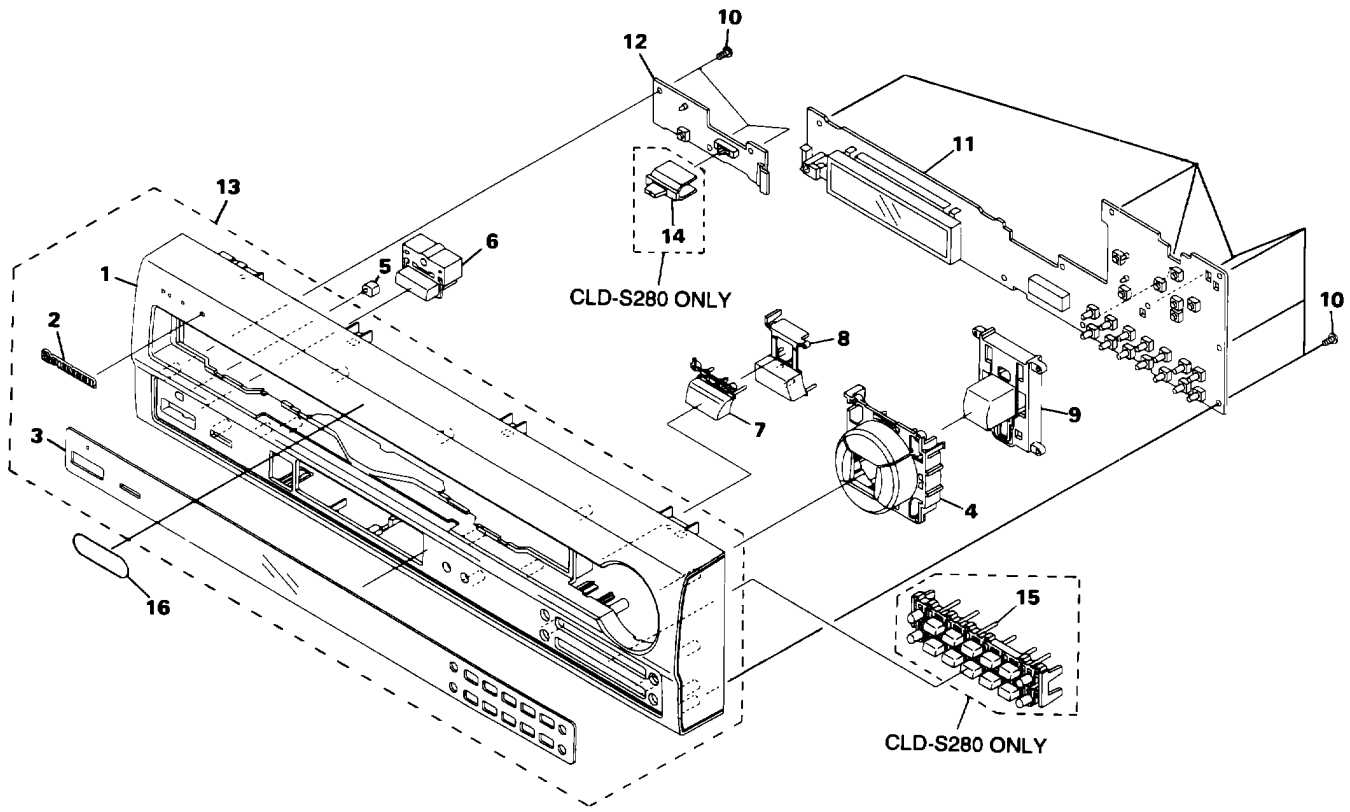
(1) CONTRAST OF CLD-S280/TD, TD/CN, TL AND CLD-S180/TD .

• CLD-S280/TD, TD/CN, TL and CLD-S180/TD have the same construction except for the following:

Mark	No.	Symbol & Description	Part No.			
			CLD-S280/TD	CLD-S280/TD/CN	CLD-S280/TL	CLD-S180/TD
NSP	1	Front panel	VNK3453	VNK3453	VNK3453	VNK3454
	3	FL lens	VEC1832	VEC1832	VEC1832	VEC1833
	11	FLKY ASSY	VWG1702	VWG1702	VWG1702	VWG1700
NSP	12	PWSB ASSY	VWG1703	VWG1703	VWG1703	VWG1701
	13	Front panel ASSY – S	VXX2371	VXX2371	VXX2371	VXX2372
	14	Slide knob	VNK3455	VNK3455	VNK3455	Not used
	15	Ten key	VNK3329	VNK3329	VNK3329	Not used
NSP	16	Getter	VRW1576	VRW1576	VRW1576	VRW1577

(2) PARTS LIST FOR CLD-S280/TD

Mark	No.	Description	Parts No.
NSP	1	Front panel	VNK3453
	2	Pioneer badge	PAM1704
	3	FL lens	VEC1832
	4	Key	VNK3364
	5	LED lens	PNW2019
	6	PW button	VNK2329
	7	LD key	VNK3319
	8	CD Key	VNK3361
	9	Play key	VNK3363
	10	Screw	BBZ30P080FMC
	11	FLKY ASSY	VWG1702
NSP	12	PWSB ASSY	VWG1703
	13	Front panel assy – S	VXX2371
	14	Slide knob	VNK3455
	15	Ten key	VNK3329
NSP	16	Getter	VRW1576



1.5 BOTTOM VIEW SECTION

(1) CONTRAST OF CLD-S280/TD, TD/CN, TL AND CLD-S180/TD .

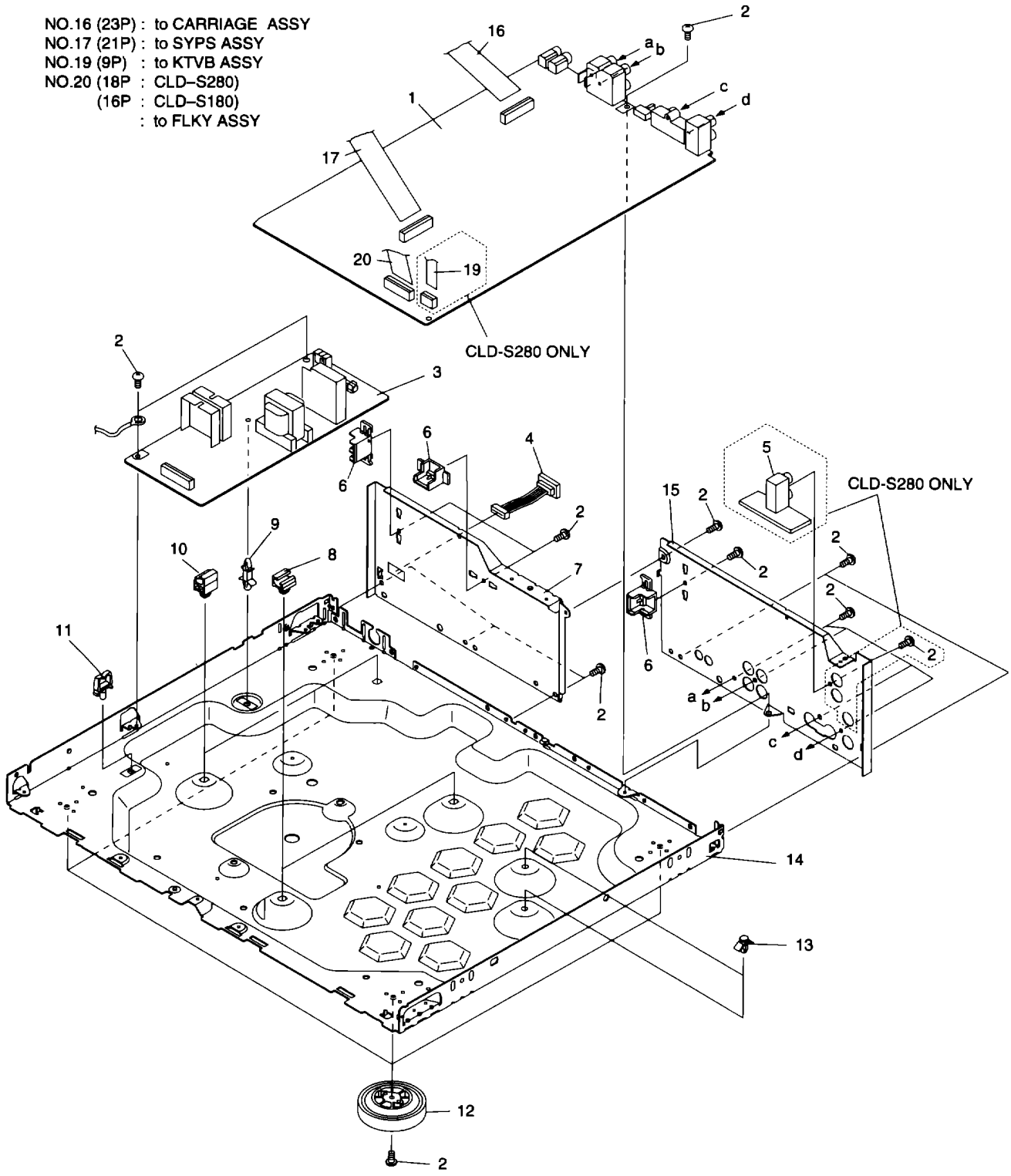
• CLD-S280/TD, TD/CN, TL and CLD-S180/TD have the same construction except for the following:

Mark	No.	Symbol & Description	Part No.			
			CLD-S280/TD	CLD-S280/TD/CN	CLD-S280/TL	CLD-S180/TD
	1	MOTHER ASSY	VWS1218	VWS1218	VWS1218	VWS1227
	5	KTVB ASSY	VWV1452	VWV1452	VWV1452	Not used
	7	Rear panel (R)	VNA1689	VNA1689	VNA1661	VNA1689
	15	Rear panel (L)	VNA1644	VNA1644	VNA1690	VNA1645
	19	Flexible cable (9P)	VDA1527	VDA1527	VDA1527	Not used

(2) PARTS LIST FOR CLD-S280/TD

Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
	1	MOTHER ASSY	VWS1218	NSP	11	Wire clip (H)	VEC1181
	2	Screw	BBZ30P080FMC		12	Insulator	PNW1912
⚠	3	SYPS ASSY	VWR1233		13	Card spacer	VEC1708
⚠	4	AC inlet ASSY	VKP2116	NSP	14	Chassis	VNA1461
	5	KTVB ASSY	VWV1452		15	Rear panel (L)	VNA1644
	6	Tray stopper	VNL1657		16	Flexible cable (23P)	VDA1464
	7	Rear panel (R)	VNA1689		17	Flexible cable (21P)	VDA1465
NSP	8	P plate holder	PNY – 405		18	.....	
NSP	9	PC support	VEC – 269		19	Flexible cable (9P)	VDA1527
NSP	10	PCB hinge	VEC1174		20	Flexible cable (18P)	VDA1467

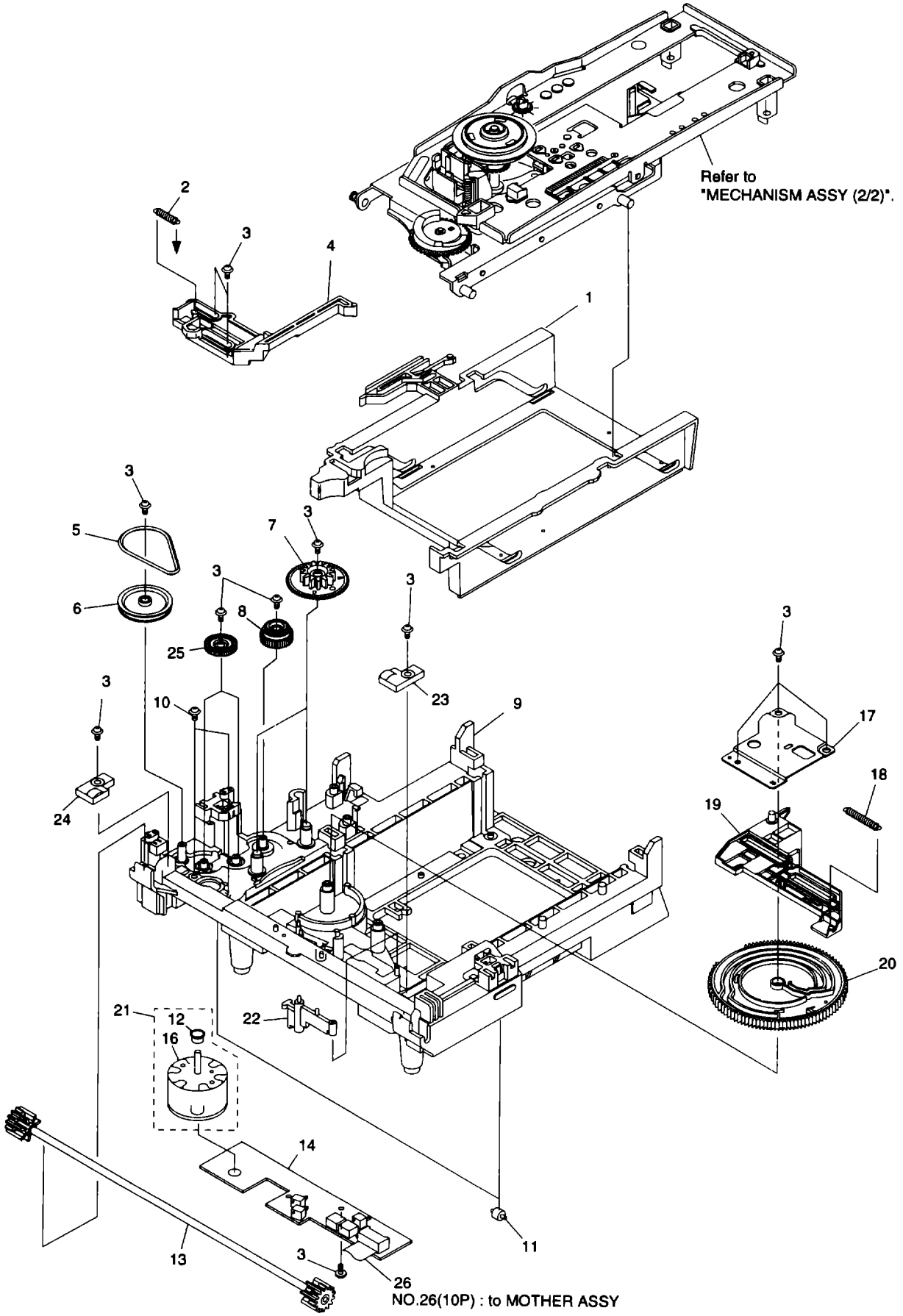
NO.16 (23P) : to CARRIAGE ASSY
NO.17 (21P) : to SYPS ASSY
NO.19 (9P) : to KTVB ASSY
NO.20 (18P : CLD–S280)
(16P : CLD–S180)
: to FLKY ASSY



1.6 MECHANISM ASSY (1/2)

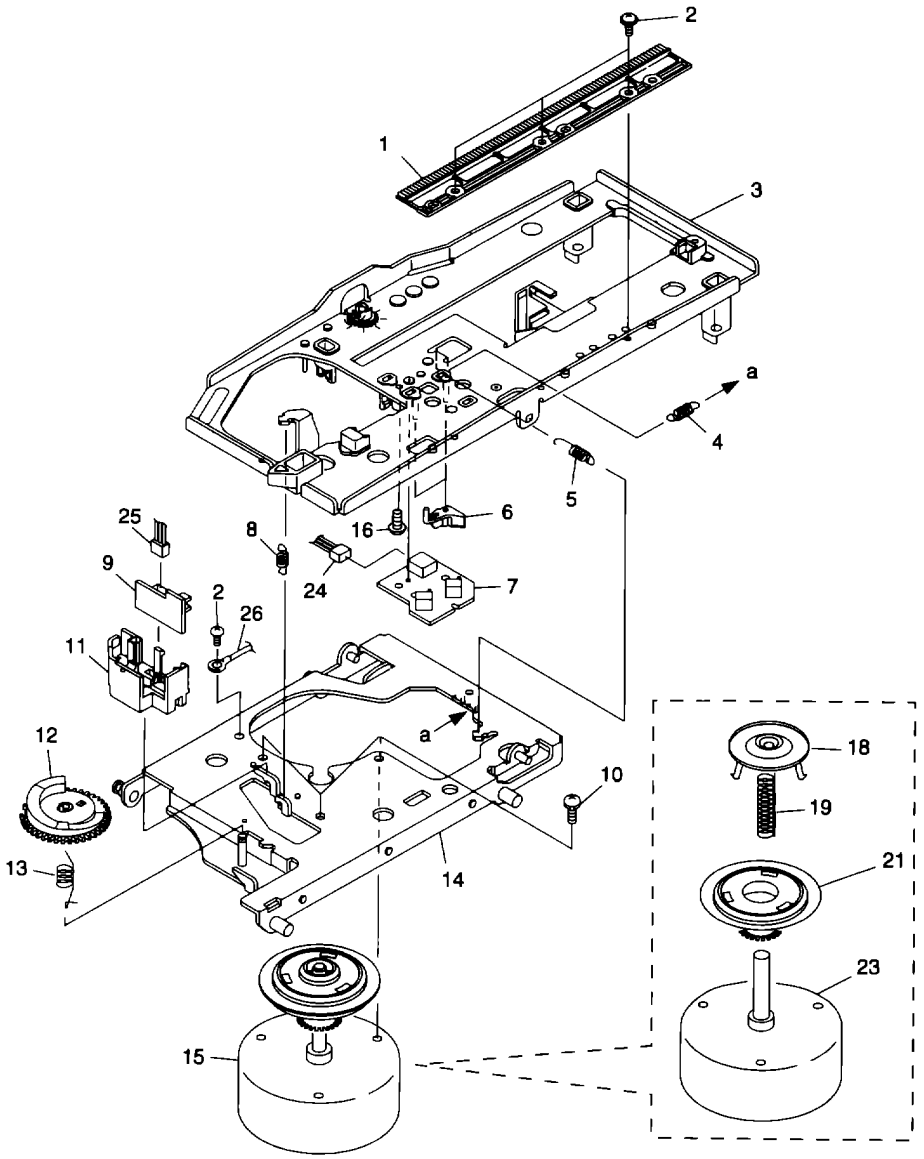
Mark	No.	Description	Parts No.
	1	Clamp cam	VNL1633
	2	CDP spring	VBH1191
	3	Screw	Z39 – 019
	4	CD plate	VNL1632
	5	Rubber belt	VEB1184
	6	Gear pulley	VNL1662
	7	Twin gear	VNL1626
	8	Center gear	VNL1660
	9	Mechanism base	VNK3239
	10	Screw	BMZ26P040FMC
	11	Roller	VNL1042
NSP	12	Motor pulley	VNL1630
	13	Synchro gear ASSY	VXA2105
NSP	14	LMSB ASSY	VWG1554
	15	.....	

Mark	No.	Description	Parts No.
NSP	16	Carriage motor	VXM1033
	17	Shaft holder	VNE1942
	18	CAS spring	VBH1190
	19	Cam plate	VNL1631
	20	Cam gear	VNL1625
	21	Loading motor ASSY	VXX2045
	22	MB – switch lever	VNL1664
	23	Slider (R)	VNL1666
	24	Slider (L)	VNL1665
	25	Double gear	VNL1661
	26	Flexible cable	VDA1466


Refer to
"MECHANISM ASSY (2/2)".
NO.26(10P) : to MOTHER ASSY

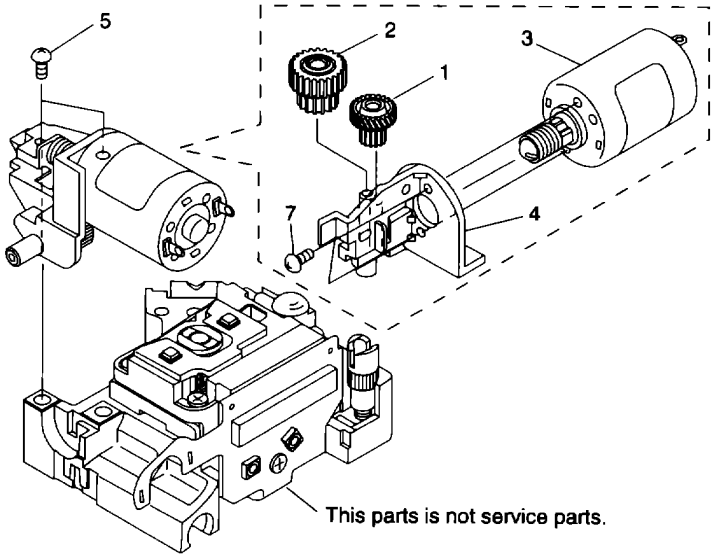
1.7 MECHANISM ASSY (2/2)

Mark	No.	Description	Parts No.
	1	CA rack	VNL1647
	2	Screw	IBZ26P060FMC
	3	Tilt base	VNL1642
	4	Radial spring	VBH1246
	5	Thrust spring	VBH1245
	6	CA – switch lever	VNL1644
NSP	7	PKSB ASSY	VWG1555
	8	Tilt tension spring	VBH1244
NSP	9	FG ASSY	VWG1556
	10	Screw	PMA30P050FMC
	11	FG base	VNL1645
	12	Tilt cam	VNL1643
	13	Tilt cam spring	VBH1243
	14	Motor base	VNE1941
	15	Spindle motor ASSY	VXA2125
	16	Screw	IBZ26P120FMC
	17	.....	
	18	Centering hab	VNL1623
	19	Centering spring	VBH1083
	20	.....	
NSP	21	R – turn table ASSY	VXA2216
	22	.....	
NSP	23	Spindle motor	VXM1057
	24	Housing ASSY(3P:blue)	VKP2045
	25	Housing ASSY(3P:yellow)	VKP2046
NSP	26	Earth lead unit	XDF – 507



1.8 CARRIAGE ASSY

Mark	No.	Description	Parts No.
	1	CA gear (A)	VNL1638
	2	CA gear (B)	VNL1639
	3	Slider motor ASSY	VXX2082
	4	Motor holder	VNL1700
	5	Screw	PBZ20P050FMC
	6	.....	
	7	Screw	PMZ20P030FMC



2. SCHEMATIC AND PCB CONNECTION DIAGRAMS

NOTE FOR SCHEMATIC DIAGRAMS (Type 4A)

1. **When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".**
2. **Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.**
3. **RESISTORS:**
   Unit: k:kΩ, M:MΩ, or Ω unless otherwise noted.
   Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
   Tolerance: (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% or ±5% unless otherwise noted.
4. **CAPACITORS:**
   Unit: p:pF or µF unless otherwise noted.
   Ratings: capacitor (µF)/ voltage (V) unless otherwise noted.
   Rated voltage: 50V except for electrolytic capacitors.
5. **COILS:**
   Unit: m:mH or µH unless otherwise noted.
6. **VOLTAGE AND CURRENT:**
   ⎕ or ← V :
   DC voltage (V) in PLAY mode unless otherwise noted.
   ⇦ mA or ← mA :
   DC current in PLAY mode unless otherwise noted.
   Value in ( ) is DC current in STOP mode.
7. **OTHERS:**
   - ⊘ or ⓿ : Adjusting point.
   - ⊸ : Measurement point.
   - The ⚠ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.
8. **SCH-□ ON THE SCHEMATIC DIAGRAM:**
   - SCH-□ indicates the drawing number of the schematic diagram. (SCH stands for schematic diagram.)
9. **SWITCHES** (Underline indicates switch position):

FLKY ASSY
S101 : 1
S102 : 2
S103 : 3
S104 : 4
S105 : 5
S106 : 6
S107 : 7
S108 : 8
S109 : 9
S110 : 0
S111 : LD
S112 : CD
S113 : □
S114 : ⏮
S115 : ⏭
S116 : ▷
S117 : ▯▯
S118 : CLEAR
S119 : D/A
S120 : PGM
S121 : +10

PWSB ASSY
S201 : POWER STANDBY/ON
S202 : NORMAL/AUTO STOP/AUTO OPEN

LMSB ASSY
S101 : SW1
S102 : SW2
S103 : SW3

PKSB ASSY
S104 : OUTER
S105 : INNER

MOTHER ASSY
S12 : RELAY PLAY ON-OFF

NOTE FOR PCB DIAGRAMS:

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

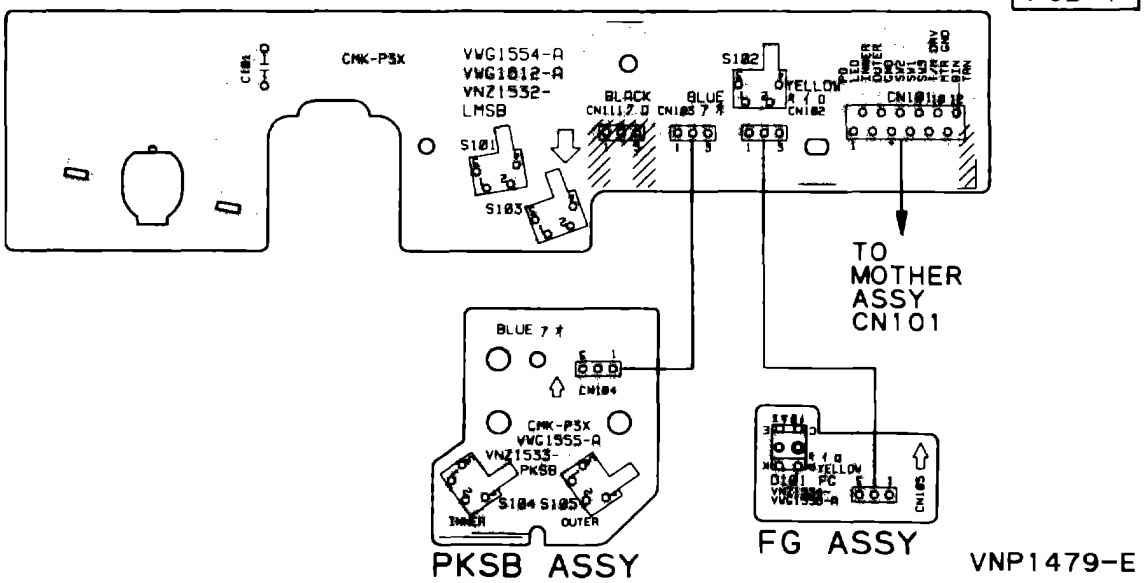
Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
B C E	B C E B C E	Transistor
B C E	B C E B C E	Transistor with resistor
D G S	D G S D G S	Field effect transistor
		Resistor array
		3- terminal regulator

3. The parts mounted on this PCB include all necessary parts for several destinations.
   For further information for respective destinations, be sure to check with the schematic diagram.

LMSB ASSY

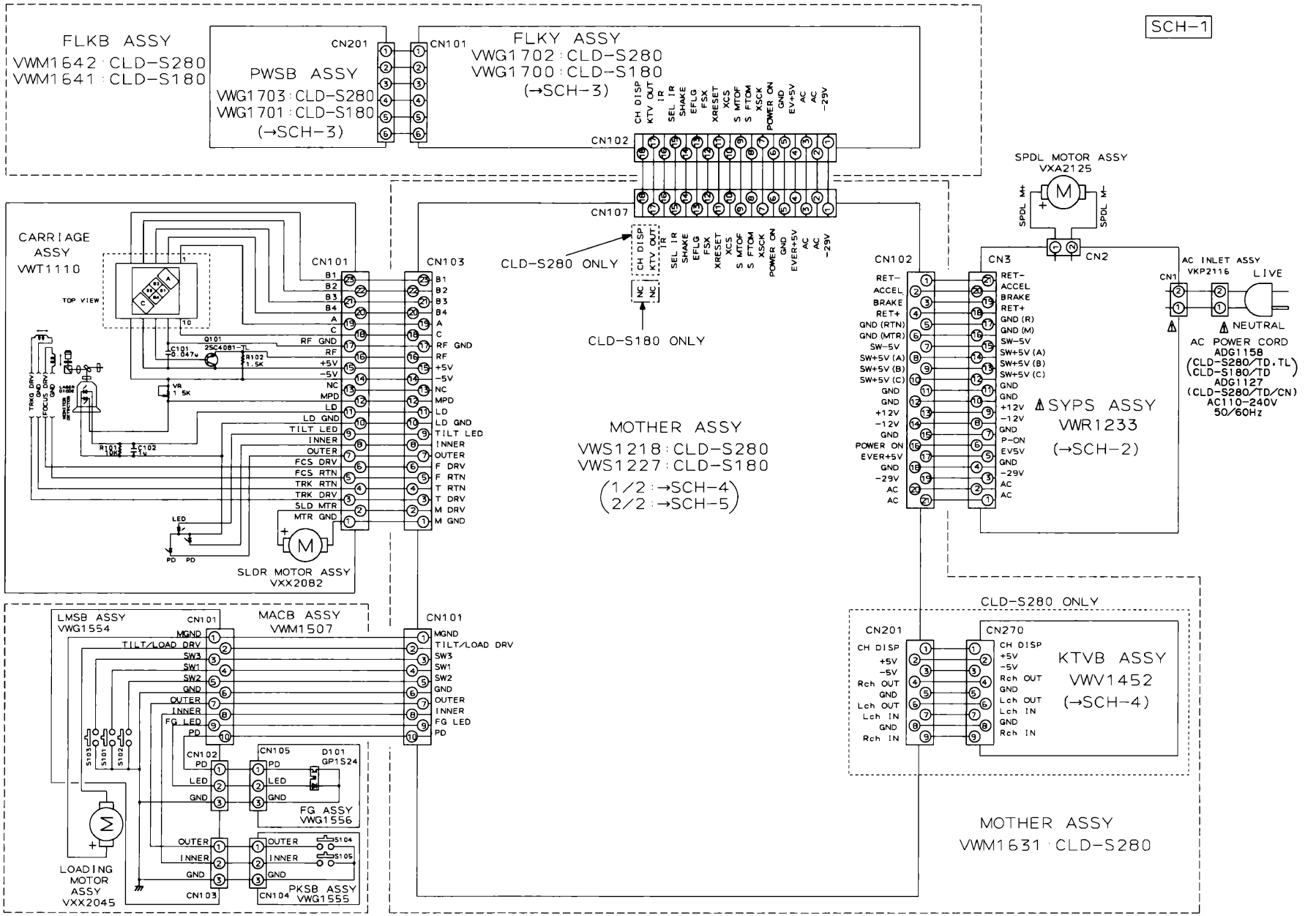
● This diagram is viewed from the mounted parts side.

PCB-1



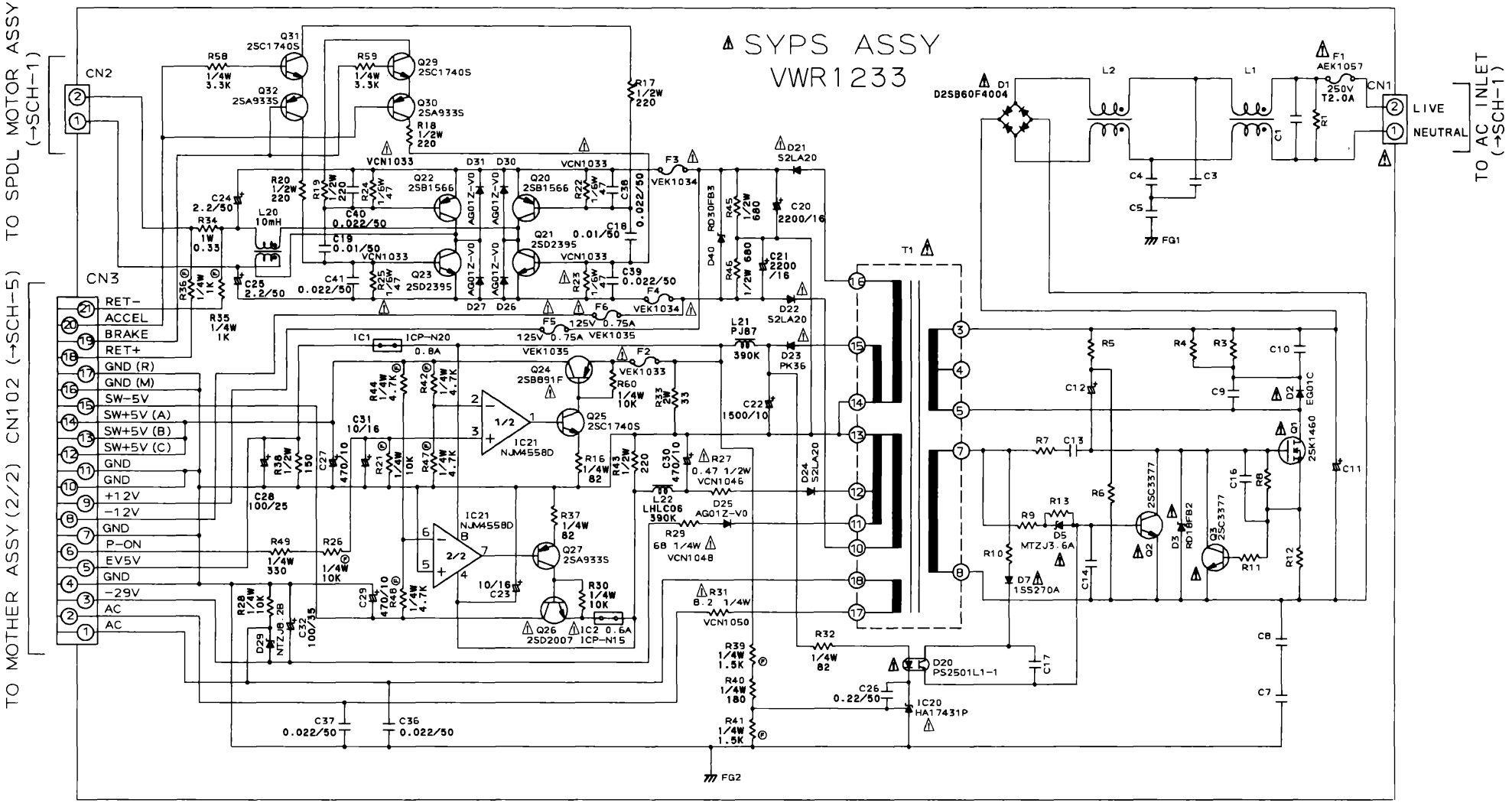
VNP1479-E

2.1 OVERALL CONNECTIONS, LMSB, PKSB, FG AND CARRIAGE ASSEMBLIES



2.2 SYPS ASSEMBLY

SCH-2



● NOTE FOR FUSE REPLACEMENT

CAUTION – FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE AND RATINGS ONLY.

<Caution on additional selection of the ⚠-marked primary parts on the power board>

- During repair, those other than the specified parts cannot be used to prevent the occurrence of an accident.
- Mark ✓ must be written in red on the board when the primary part of the power block is repaired.
- During part replacement, maintain the air clearance so that the replaced parts do not touch other parts.

SCH-2 SYPS ASSY

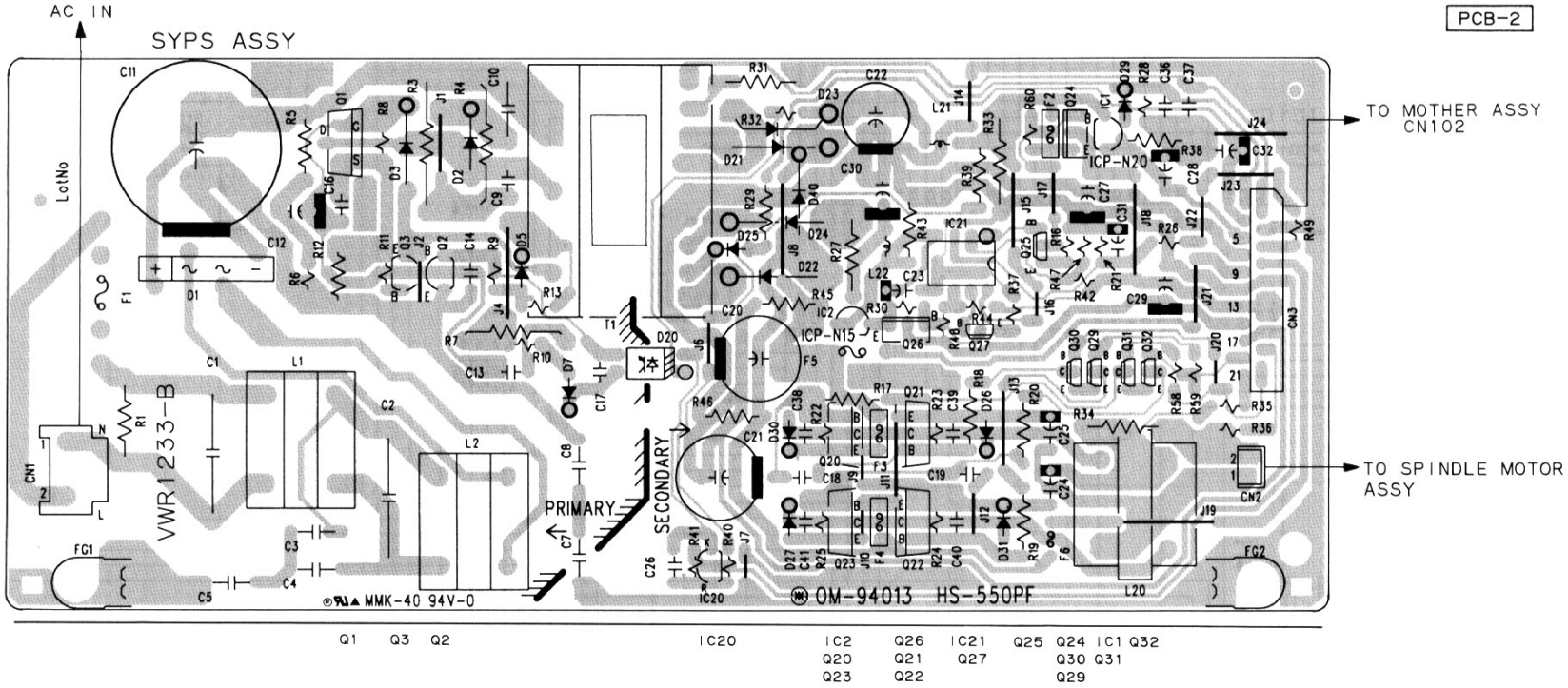
CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE WITH SAME TYPE NO. ICP-N20, MFD BY ROHM CO., LTD. FOR IC1.

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE WITH SAME TYPE NO. ICP-N15, MFD BY ROHM CO., LTD. FOR IC2.

SYPS ASSY SCH-2

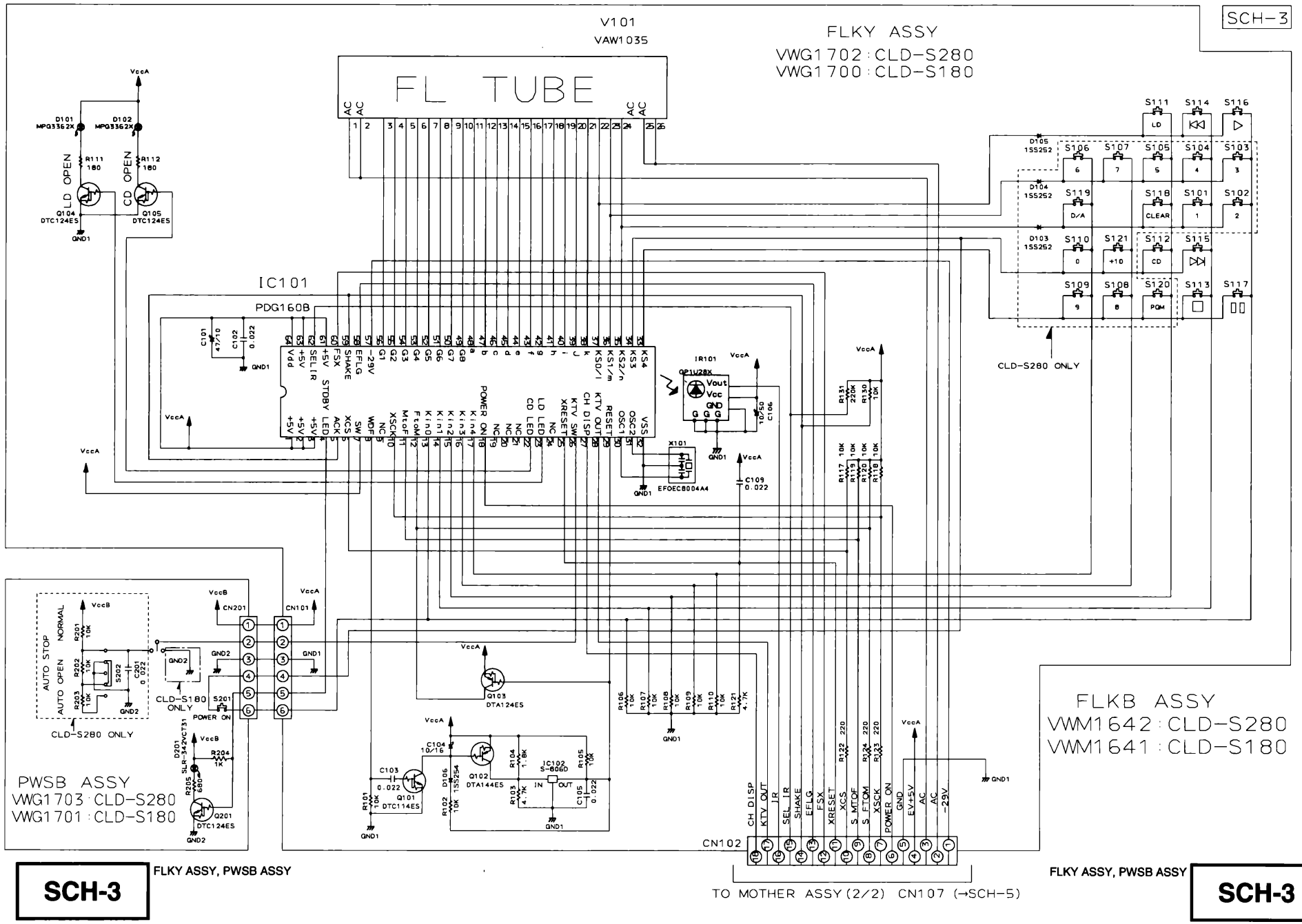
● This diagram is viewed from the mounted parts side.

PCB-2



Q1 Q3 Q2 IC20 IC2 Q20 Q23 Q26 Q21 Q22 IC21 Q27 Q25 Q24 Q30 Q29 IC1 Q32 Q31

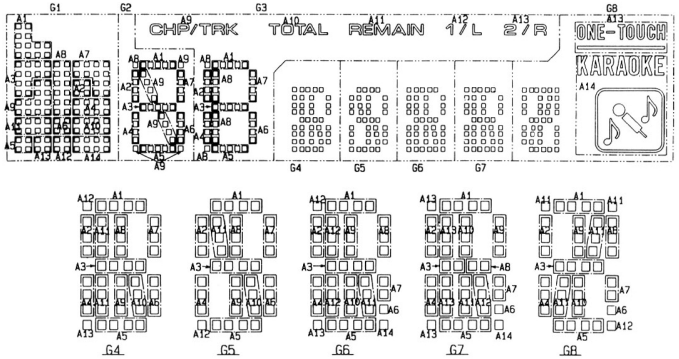
2.3 FLKY AND PWSB ASSEMBLIES



SCH-3 FLKY ASSY, PWSB ASSY

FLKY ASSY, PWSB ASSY **SCH-3**

● FL INFORMATION (V101, VAW1035)



ANODE GRID ASSIGNMENT & PIN ASSIGNMENT

	G1	G2	G3	G4	G5	G6	G7	G8
P1	A1	A1	A1	A1	A1	A1	A1	A1
P2	A2	A2	A2	A2	A2	A2	A2	A2
P3	A3	A3	A3	A3	A3	A3	A3	A3
P4	A4	A4	A4	A4	A4	A4	A4	A4
P5	A5	A5	A5	A5	A5	A5	A5	A5
P6	A6	A6	A6	A6	A6	A6	A6	A6
P7	A7	A7	A7	A7	A7	A7	A7	A7
P8	A8	A8	A8	A8	A8	A8	A8	A8
P9	A9	A9	CHP/TRK	A9	A9	A9	A9	A9
P10	A10		TOTAL	A10	A10	A10	A10	A10
P11	A11		REMAIN	A11	A11	A11	A11	A11
P12	A12		1/L	A12	A12	A12	A12	A12
P13	A13		2/R	A13		A13	A13	ONE-TOUCH
P14	A14					A14	A14	KARAOKE

PIN ASSIGNMENT

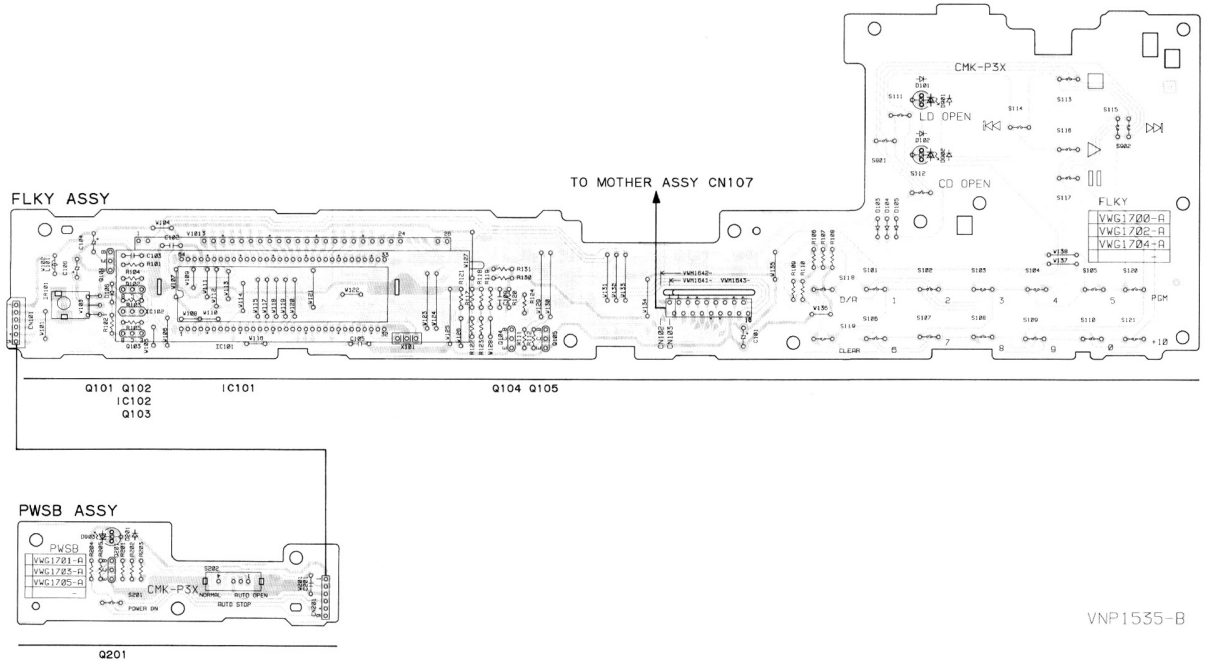
Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Assignment	F	F	NP	NL	NL	NL	NL	G1	G2	G3	G4	G5	G6	G7	G8	P1	P2

Pin No.	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
Assignment	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	NL	NL	NP	F	F

F:Filament G1~G8:Grid P1~P14:Anode NP:No pin NL:No Lead

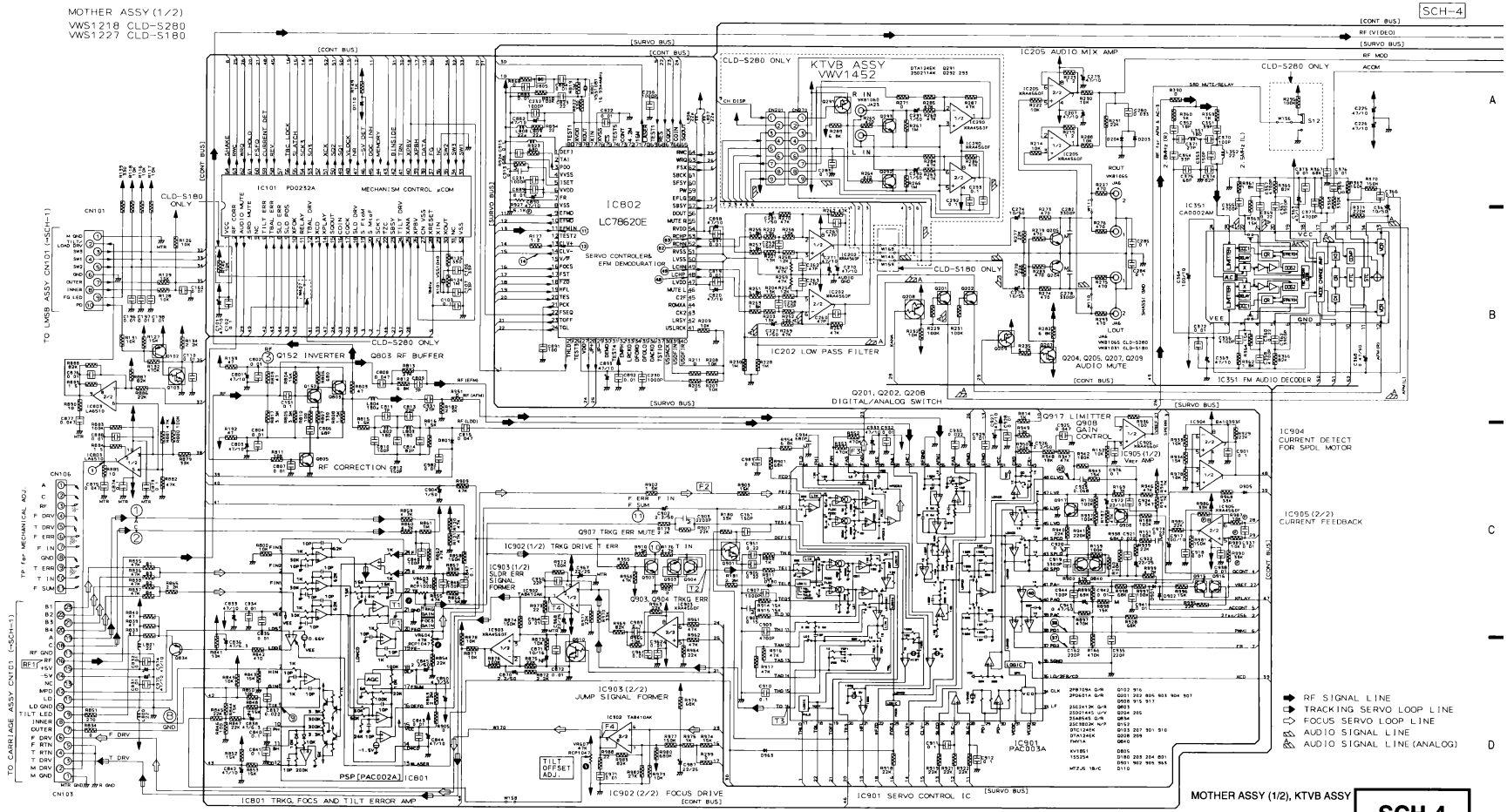
● This diagram is viewed from the mounted parts side.

PCB-3

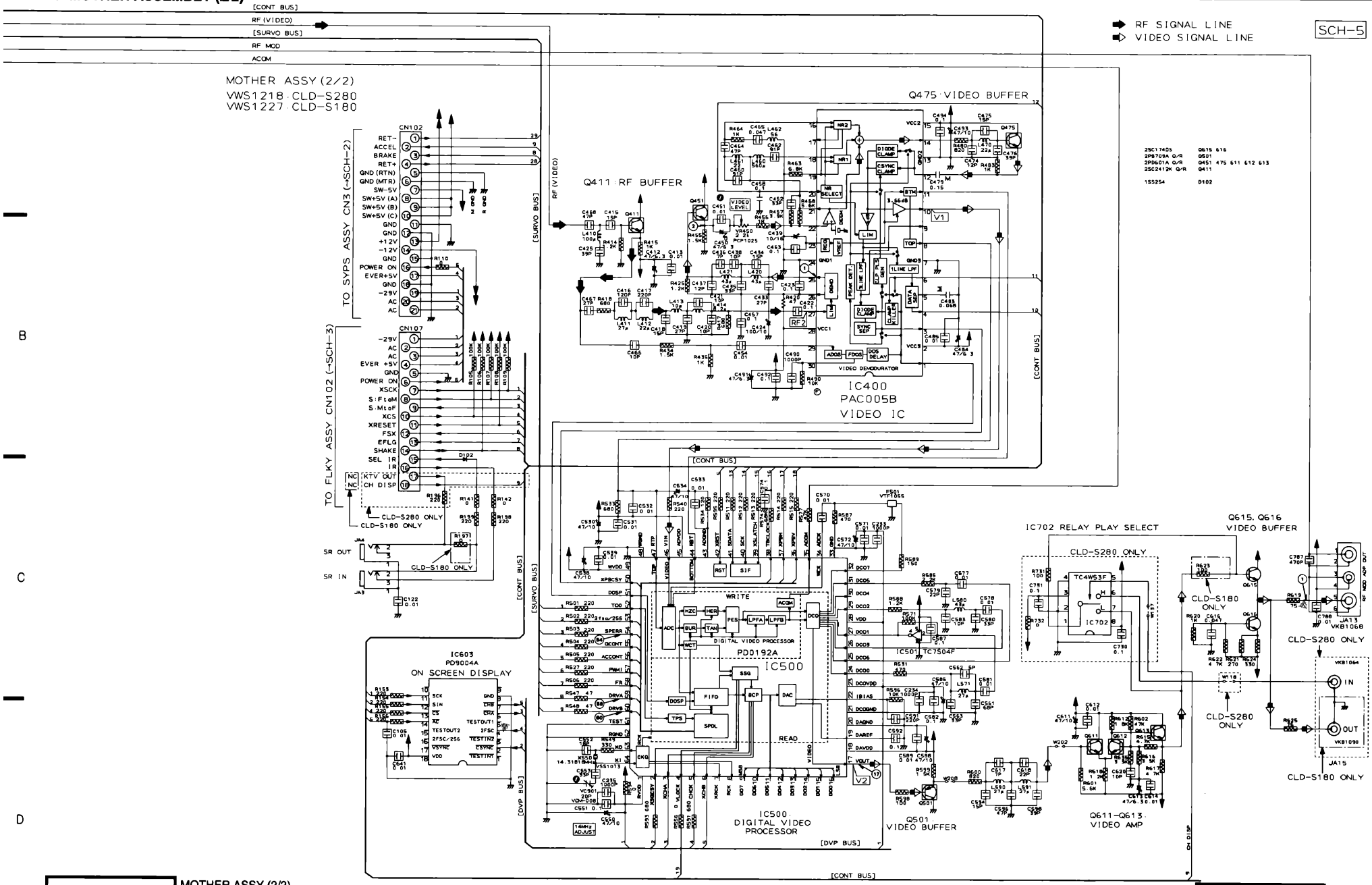


VNP1535-B

2.4 MOTHER (1/2) AND KTVB ASSEMBLIES



2.5 MOTHER ASSEMBLY (2/2)



WAVEFORMS AND VOLTAGE

MOTHER ASSEMBLY

Note: (No) in the table correspond to the pin number.

Measurement condition: In case when (D.audio) is written, at time when disc that has digital audio recording is played.

IC801 (PAC002A)

T1 5ms/div
200mVp-p
0V
DC mode

F1 5ms/div
100mVp-p
0V
DC mode

(9) 10ms/div
0.2Vp-p
0V
DC mode

IC802 (LC78620E)

(11) 0.5μs/div
1.6Vp-p
0V
DC mode

50μs/div
(13) 5Vp-p
0V
(14)
0V
DC mode

0.2μs/div
(48),(53) 5Vp-p
0V
(49),(52) 5Vp-p
0V
DC mode

IC803 (LA6510)

(1) 2ms/div
1.8Vp-p
0V
DC mode

IC901 (PAC003A)

T3 5ms/div
500mVp-p
0V
DC mode

F3 5ms/div
1Vp-p
0V
DC mode

10μs/div
(38) 5Vp-p
0V
(37)
0V
DC mode

(40) 10ms/div
0.3Vp-p
0V
DC mode

(48) 50μs/div
1Vp-p
0V
DC mode

IC902 (TA8410AK)

T4 5ms/div
2Vp-p
0V
DC mode

F4 5ms/div
5Vp-p
0V
DC mode

CN106

T4 5ms/div
5.8Vp-p
0V
DC mode

(7) (F2) 5ms/div
200mVp-p
0V
DC mode

F4 5ms/div
15Vp-p
0V
DC mode

(10) 5ms/div
100mVp-p
0V
DC mode

(11) 5ms/div
0V
0.2Vp-p
DC mode

IC400 (PAC005B)

V1 10μs/div
1.6Vp-p
0V
DC mode

RF2 2ms/div
400mVp-p
AC mode

(1) 10μs/div
1Vp-p
0V
DC mode

Q451 Emitter

(2) 10μs/div
400mVp-p
AC mode

IC500 (PD0192A)

V2 10μs/div
1Vp-p
DC mode

(54) 5ms/div
5Vp-p
0V
DC mode

10μs/div
(60) 5Vp-p
0V
(59)
0V
DC mode

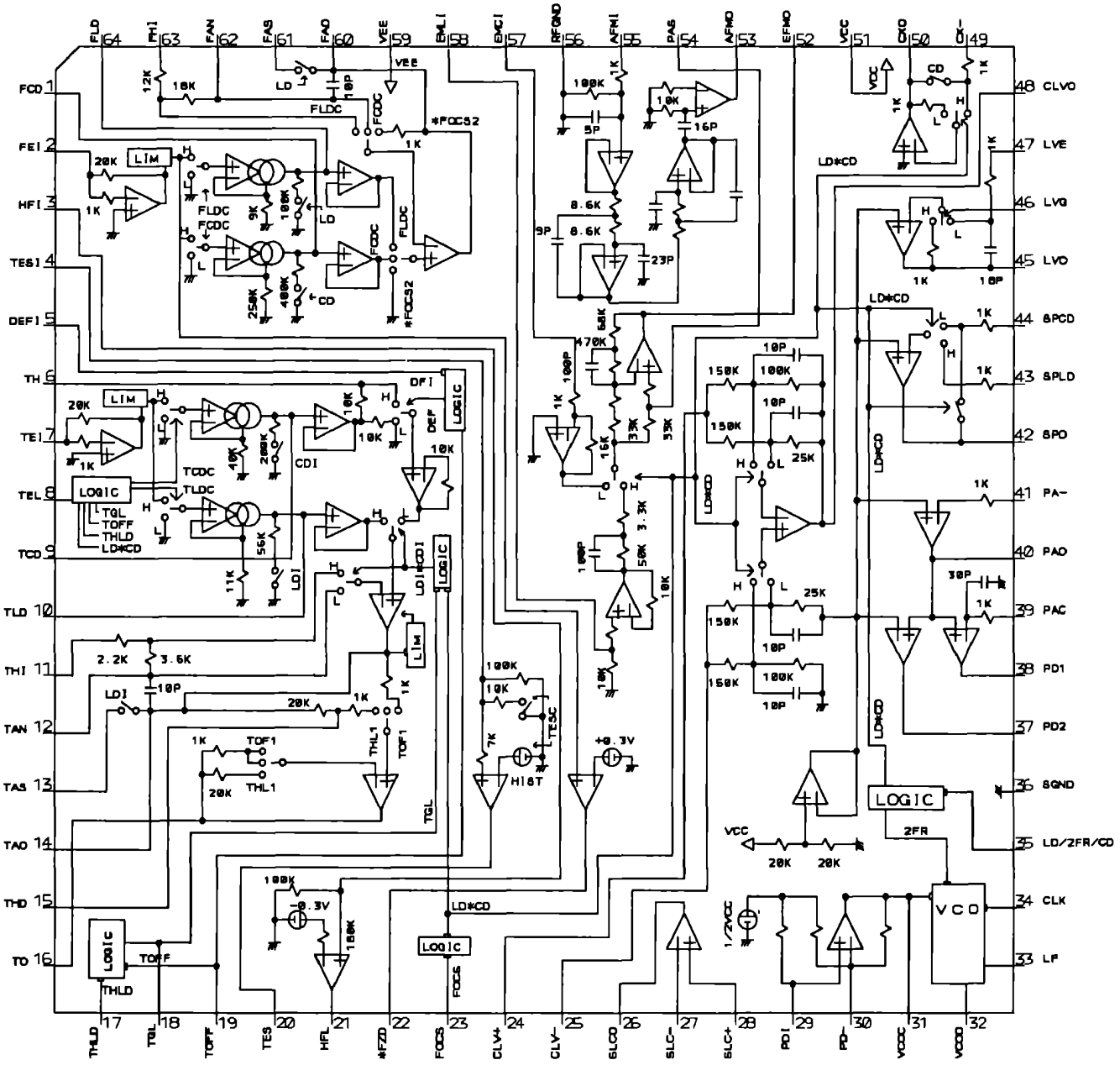
CN103

RF1 2ms/div
600mVp-p
AC mode

Video out

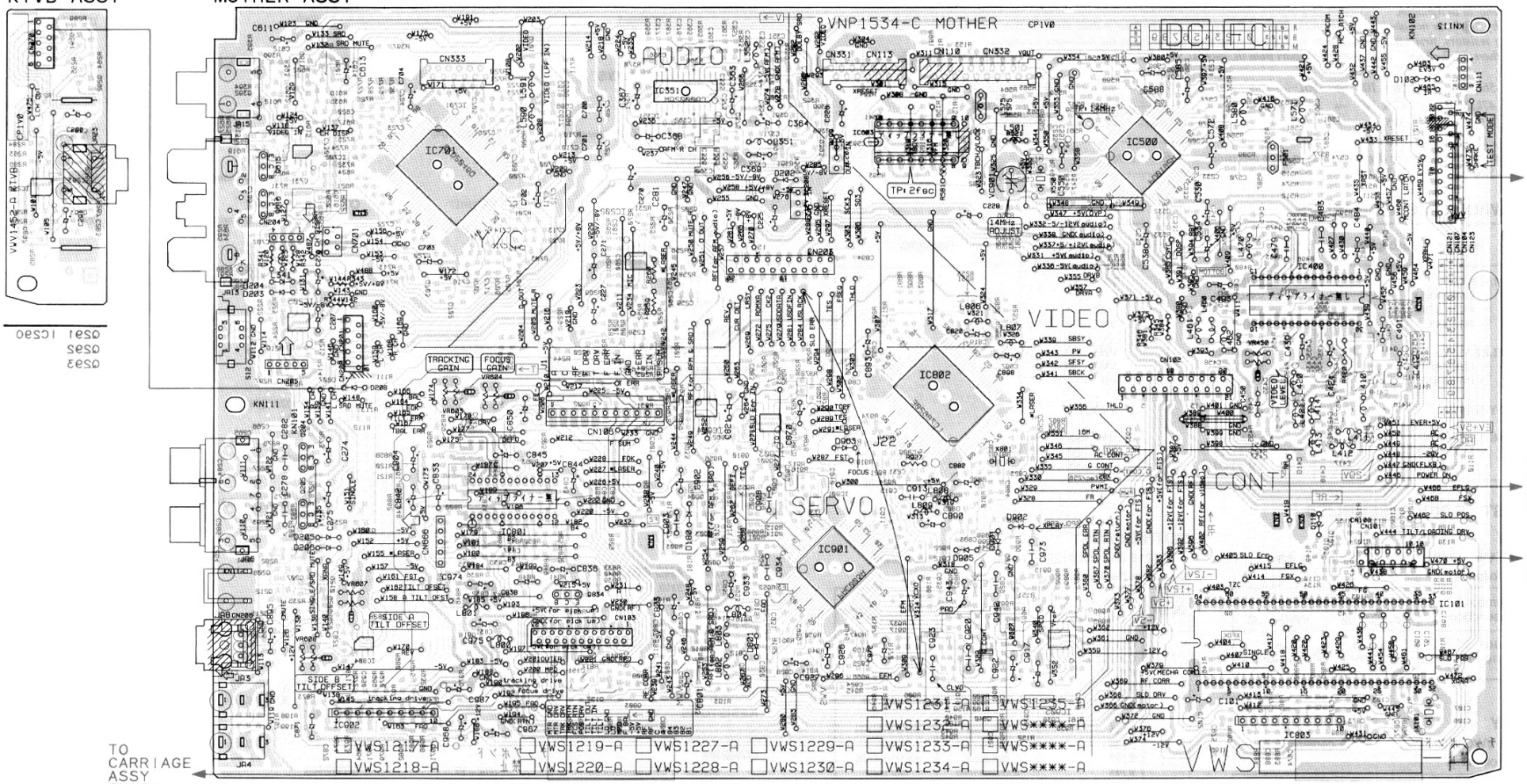
(1) 10μs/div
1Vp-p
(75Ω termination) 0V
DC mode

● The Inside block diagram of IC901 (PAC003A)



● This diagram is viewed from the mounted parts side.

PCB-4



3. PCB PARTS LIST

NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	→	*56 × 10¹*	→ *561*	*RD1/8PM 5 6 1 J*
47kΩ	→	*47 × 10³*	→ *473*	*RD1/4PS 4 7 3 J*
0.5Ω	→	*0R5*		*RN2H 0 R 5 K*
1Ω	→	*010*		*RS1P 0 1 0 K*

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	→	*562 × 10¹*	→ *5621*	*RN1/4PC 5 6 2 1 F*

● LIST OF WHOLE PCB ASSEMBLIES

Mark	Symbol & Description	Part No.		Remarks
		CLD-S280/TD, TD/CN, TL	CLD-S180/TD	
NSP	MACB ASSY	VWM1507	VWM1507	
NSP	├ LMSB ASSY	VWG1554	VWG1554	
NSP	├ PKSB ASSY	VWG1555	VWG1555	
NSP	└ FG ASSY	VWG1556	VWG1556	
	FLKB ASSY	VWM1642	VWM1641	
	├ FLKY ASSY	VWG1702	VWG1700	
NSP	└ PWSB ASSY	VWG1703	VWG1701	
⚠	SYPS ASSY	VWR1233	VWR1233	
NSP	MOTHER ASSY	VWM1631	Not used	
	├ MOTHER ASSY	VWS1218	VWS1227	
	└ KTVB ASSY	VWV1452	Not used	

● CONTRAST OF PCB ASSEMBLIES

FLKY ASSY

VWG1702 and VWG1700 have the same construction except for the following:

Mark	Symbol & Description	Part No.	
		VWG1702	VWG1700
	D103 – D104	1SS252	Not used
	S101 – S110, S118 – S121	RSG1034	Not used

PWSB ASSY

VWG1703 and VWG1701 have the same construction except for the following:

Mark	Symbol & Description	Part No.	
		VWG1703	VWG1701
	C201	CKPUYF223Z25	Not used
	R201 – R203	RD1/6PM103J	Not used
	S202	VSH1014	Not used

MOTHER ASSY

VWS1218 and VWS1227 have the same construction except for the following:

Mark	Symbol & Description	Part No.	
		VWS1218	VWS1227
	C730,C731	CKSQYF104Z25	Not used
	C207,C271	CEAL470M10	CEAS470M10
	CN201	52045 – 0945	Not used
	IC702	TC4W53F	Not used
	JA15	VKB1064	VKB1090
	R145	Not used	RS1/10S103J
	R196	RS1/10S221J	Not used
	R197	Not used	RS1/10S000J
	R295	RS1/10S104J	Not used
	R623	Not used	RS1/10S101J
	R731	RS1/10S101J	Not used
	R732	RS1/10S000J	Not used
	S12	VSH1009	Not used

• PARTS LIST FOR CLD-S280/TD

Mark	No.	Description	Parts No.
MACB ASSY			
OTHERS			
		PC Board	VNP1479
LMSB ASSY			
SWITCHES AND RELAYS			
	S101 – S103		DSG1017
OTHERS			
	CN101	10P FCC Connector	52044 – 1045
PKSB ASSY			
SWITCHES AND RELAYS			
	S104, S105		DSG1017
FG ASSY			
SEMICONDUCTORS			
	D101		GP1S24
FLKB ASSY			
OTHERS			
		PC Board	VNP1535
FLKY ASSY			
SEMICONDUCTORS			
	IC101		PDG160B
	IC102		S – 806D
	Q103		DTA124ES
	Q102		DTA144ES
	Q101		DTC114ES
	Q104, Q105		DTC124ES
	D103 – D105		1SS252
	D106		1SS254
	D101, D102		MPG3362X
SWITCHES AND RELAYS			
	S101 – S110, S118 – S121		RSG1034
	S111 – S117		VSG1008
CAPACITORS			
	C104		CEAL100M16
	C106		CEAS100M50
	C101		CEAS470M10
	C102, C103, C105, C109		CKPUYF223Z25
RESISTORS			
		All Resistors	RD1/6PM□□□J
OTHERS			
	CN101	FJ Connector 6P	06R – FJ
	CN102	FFC Bottom connector 18P	52492 – 1820
	X101	Ceramic resonator	EFOEC8004A4
		Remote receiver unit	GP1U28X
	V101	FL Tube	VAW1035
		Spacer	VEC1599
		FL Holder(FE)	VNF1085

Mark	No.	Description	Parts No.
PWSB ASSY			
SEMICONDUCTORS			
	Q201		DTC124ES
	D201		SLR – 342VCT31
SWITCHES AND RELAYS			
	S201		VSG1008
	S202		VSH1014
CAPACITORS			
	C201		CKPUYF223Z25
RESISTORS			
		All Resistors	RD1/6PM□□□J
OTHERS			
	CN201	FJ Connector 6P	06P – FJ
SYPS ASSY			
SEMICONDUCTORS			
⚠	IC20		HA17431P
⚠	IC2		ICP – N15
⚠	IC1		ICP – N20
	IC21		NJM4558D
	Q27, Q30, Q32		2SA933S
	Q20, Q22		2SB1566
⚠	Q24		2SB891F
	Q25, Q29, Q31		2SC1740S
⚠	Q2, Q3		2SC3377
⚠	Q26		2SD2007
	Q21, Q23		2SD2395
⚠	Q1		2SK1460
⚠	D7		1SS270A
	D25 – D27, D30, D31		AG01Z – VO
⚠	D1		D2SB60F4004
⚠	D2		EG01C
⚠	D5		MTZJ3.6A
	D29		MTZJ8.2B
⚠	D20		PS2501L1 – 1M
⚠	D3		RD18FB2
	D40		RD30FB3
⚠	D23		RK36
⚠	D21, D22, D24		S2LA20
RESISTORS			
⚠	R22 – R25	(47Ω, 1/6W)	VCN1033
⚠	R27	(0.47Ω, 1/2W)	VCN1046
⚠	R29	(68Ω, 1/4W)	VCN1048
⚠	R31	(8.2Ω, 1/4W)	VCN1050
OTHERS			
⚠	F1	FUSE(T2A)	AEK1057
⚠	F2	FUSE	VEK1033
⚠	F3, F4	FUSE	VEK1034
⚠	F5, F6	FUSE	VEK1035
MOTHER ASSY			
OTHERS			
		PC Board	VNP1534

Mark No.	Description	Parts No.
MOTHER ASSY		
SEMICONDUCTORS		
	IC904	BA10393F
	IC351	CA0002AM
	IC803	LA6510
	IC802	LC78620E
	IC801	PAC002A
	IC901	PAC003A
	IC400	PAC005B
	IC500	PD0192A
	IC101	PD0232A
	IC603	PD9004A
	IC902	TA8410AK
	IC702	TC4W53F
	IC501	TC7S04F
	IC202, IC205, IC903, IC905	XRA4560F
	Q102, Q501, Q916	2PB709A
	Q201, Q202, Q451, Q475	2PD601A
	Q611 – Q613, Q805, Q903, Q904	2PD601A
	Q907, Q908, Q915, Q917	2PD601A
	Q834	2SA854S
	Q615, Q616	2SC1740S
	Q411, Q803	2SC2412K
	Q152	2SC3802K
	Q204, Q205	2SD2144S
	Q208, Q209	DTA124EK
	Q103, Q207, Q901, Q910	DTC124EK
	Q840	FMY1A
	D102, D180, D203, D204, D801	1SS254
	D901, D902, D905, D963	1SS254
	D805	KV1851
	D110	MTZJ5.1B
COILS AND FILTERS		
	L413	LAU100J
	L410	LAU101J
	L351, L802 – L804	LAU181J
	L352, L412, L461, L470	LAU220J
	L800, L801, L806 – L809	LAU220J
	L411, L571, L590, L591	LAU270J
	L420, L421, L580	LAU430J
	L462	LAU560J
	L414	LAU8R2J
	L460	LFA561J
	F501	VTF1055
SWITCHES AND RELAYS		
	S12	VSH1009
CAPACITORS		
	C562	CCSQCH050C50
	C436, C617, C809, C811	CCSQCH070D50
	C420, C421, C438, C466, C583	CCSQCH100D50
	C620	CCSQCH100D50
	C370, C810, C846, C848, C891	CCSQCH101J50
	C944	CCSQCH101J50
	C437, C474	CCSQCH120J50
	C416	CCSQCH121J50
	C415, C418, C434, C475, C594	CCSQCH150J50
	C161, C258, C259, C353, C812	CCSQCH151J50
	C352, C552	CCSQCH180J50
	C579, C618, C813, C823, C950	CCSQCH220J50
	C162, C417, C591, C935	CCSQCH221J50
	C371, C419, C433, C467, C931	CCSQCH270J50
	C106, C107, C354, C435, C452	CCSQCH330J50
	C553, C563, C580	CCSQCH330J50
	C351, C425, C476, C598	CCSQCH390J50
	C260 – C263, C464, C468, C596	CCSQCH470J50
	C787	CCSQCH471J50
	C375, C561, C806	CCSQCH680J50
	C374, C814	CCSQCH820J50
	C460, C462	CCSQCH910J50
	C439	CEAL100M16
	C207, C271	CEAL470M10
	C412, C484, C491, C613, C836	CEAL470M6R3
	C838	CEALNP470M6R3
	C871	CEANP100M16
	C972	CEANP220M10
	C450	CEANP470M6R3
	C227, C281, C904	CEAS010M50
	C274, C275, C367	CEAS100M50
	C364, C424, C917	CEAS101M10
	C922, C967, C968, C987	CEAS220M25
	C845, C870, C902, C926	CEAS2R2M50
	C101, C225, C226	CEAS470M10
	C270, C279, C363, C369	CEAS470M10
	C493, C530, C534, C538, C550	CEAS470M10
	C572, C585, C588, C611, C801	CEAS470M10
	C803, C820, C833, C842, C844	CEAS470M10
	C882, C890, C893, C898, C927	CEAS470M10
	C933, C974, C975	CEAS470M10
	C368, C943	CEASR47M50
	C850	CEJA4R7M35
	C230 – C235, C256, C490, C907	CKSQYB102K50
	C919	CKSQYB332K50
	C361, C362	CKSQYB392K50
	C355 – C358, C377, C909	CKSQYB472K50
	C105, C110, C122, C160	CKSQYF103Z50
	C196 – C198, C372, C373, C376	CKSQYF103Z50
	C413, C451, C454, C485	CKSQYF103Z50
	C531 – C533, C539, C570, C571	CKSQYF103Z50
	C577, C578, C581, C589, C612	CKSQYF103Z50
	C614, C641, C788, C802, C804	CKSQYF103Z50
	C807, C819, C822, C831, C832	CKSQYF103Z50
	C834, C835, C843, C872, C876	CKSQYF103Z50
	C883, C884, C888, C889, C892	CKSQYF103Z50
	C897, C918, C928, C929, C932	CKSQYF103Z50
	C937, C938, C941, C961, C962	CKSQYF103Z50
	C964, C971, C982	CKSQYF103Z50
	C102, C103, C151, C284, C285	CKSQYF104Z25
	C365, C366, C422, C423, C453	CKSQYF104Z25
	C457, C458, C492, C494, C551	CKSQYF104Z25
	C574, C582, C587, C592	CKSQYF104Z25
	C730, C731, C840, C841, C847	CKSQYF104Z25
	C873, C874, C901, C910 – C912	CKSQYF104Z25

Mark	No.	Description	Parts No.
	C915, C976, C981, C983		CKSQYF104Z25
	C837, C921, C930		CKSQYF223Z50
	C359, C360, C905, C951		CKSQYF224Z25
	C280		CKSQYF333Z50
	C465, C616, C808, C815, C875		CKSQYF473Z25
	C877, C924, C925		CKSQYF473Z25
	C942		CQMA103J50
	C913, C920		CQMA104J50
	C479, C908		CQMA154J50
	C903		CQMA222J50
	C973		CQMA224J50
	C278, C282		CQMA332J50
	C934		CQMA681J50
	C483, C923		CQMA683J50
	VC901		VCM – 008
RESISTORS			
	R420		RD1/6PM470J
	R259, R260		RD1/6PM473J
	R490, R987, R989		RN1/10SE103D
	R986, R990		RN1/10SE333D
	R261, R262		RN1/10SE473D
	R927		RN1/6PQ5101F
	VR450	(2.2KΩ, 0.1W)	PCP1025
	VR603	(4.7KΩ, 0.1W)	RCP1020
	VR604, VR607	(47KΩ, 0.1W)	RCP1047
		Other Resistors	RS1/10S□□□J
OTHERS			
	CN201	9P FCC Connector	52045 – 0945
	CN101	10P FCC Connector	52045 – 1045
	CN107	18P FCC Connector	52045 – 1845
	CN102	21P FCC Connector	52045 – 2145
	CN103	23P FCC Connector	52233 – 2310
	CN106	11P Top post	B11P – SHF – 1AA
	JA3, JA4	Remote control jack	RKN1004
		PCB Binder	VEF1040
	JA15	2P Pin jack	VKB1064
	JA6	4P Pin jack	VKB1065
	JA13	RF Pin jack	VKB1068
		Screw terminal	VNE1948
	KN101, KN102	Earth metal fitting	VNF1084
	X101	Ceramic resonator (9MHz)	VSS1040
	X550	Crystal resonator (14.31818MHz)	VSS1073
	X801	Crystal resonator (16MHz)	VSS1081

KTVB ASSY

SEMICONDUCTORS

IC290		XRA4560F
Q292, Q293		2SD2114K
Q291		DTA124EK

CAPACITORS

C290, C291		CEAS010M50
C283, C292, C293		CKSQYF104Z25

RESISTORS

	All Resistors	RS1/10S□□□J

OTHERS

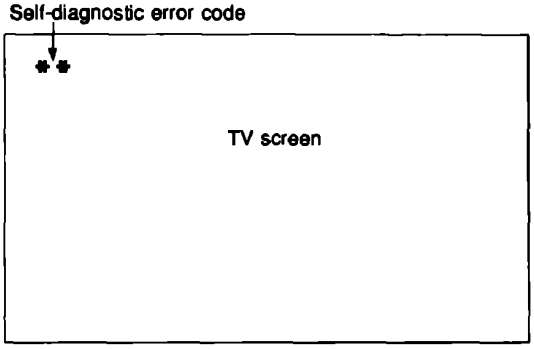
CN270	9P FCC Connector	52045 – 0945
JA23	Jack	VKB1060
	Pin jack holder	VNE2043

4. SELF-DIAGNOSTIC FUNCTIONS

4.1 SELF-DIAGNOSTIC FUNCTIONS

The self-diagnostic functions automatically display an error code on the TV screen and front panel fluorescent display section when there is an error. The customer checks the error code and conveys it to the service personnel to make repairs more efficient.

After an error occurs, even if the error code goes off, you can display the error code again by holding down the CLEAR key for 10 seconds (except a loading error [L*] display). However, if the power cord is unplugged, the error code information is lost.



This table explains the information for analyzing the cause when an error occurs with the CLD player.

Self-diagnostic error code	Contents	Conditions	Probable cause
H0	Spindle overcurrent detection error.	In the play state, overcurrent was detected in the spindle motor. Monitoring starts 5 seconds after the start of play or special playback mode, this error is detected if the overcurrent port is "L" for 4 seconds.	· Motor NG · Clamper rubbing
U0	FG abnormality error	①At LD startup, the rate of rotation calculated from the FG was less than 15 rpm for 5 consecutive seconds from the spindle Run command. ②At CD startup, there was less than 1/8th rotation even after 5 seconds had passed since the end of acceleration. ③During play search, CD : subcodes are being read/LD : Phillips codes are being read and the spindle is locked, but a state in which the rate of rotation calculated from the FG was less than 15 rpm continued for 5 seconds or more. In the above case, it is judged that an abnormality has occurred in the FG sensor and that accurate rotation rate calculation has become impossible.	· FG sensor abnormality, FG signal not coming to mechanism controller · FG sensor clogged · Rubbing between FG sensor and slit · Turntable dropped · FG slit deposition NG
H1	Partial short error	①At LD startup, the speed did not reach 1200 rpm within a certain time (12 seconds) after the spindle Run command. ②At CD startup, a certain speed (313 rpm) was not reached within 6 seconds from the end of spindle acceleration.	· Spindle motor NG · Commutator NG · Bearing too tight · Power supply NG
H2	Power supply abnormality error	−5 V power supply abnormality detected. The power supply abnormality port is constantly monitored and if its signal stays high for about 1 second consecutively, the power supply is judged to be abnormal.	· −5V not fed from SYPS assy · Parts shorted
L*	Loading error	① When loading operation goes over time (approx. 10 sec.). ② When assist at disc sense entry ends and is not tilt neutral. ③ When assist at set up entry ends and is not tilt neutral.	·Tilt switch 1,2,3 abnormal, so tilt/loading state not read in correctly. ·tilt/loading mechanism mechanically locked ·Drive IC NG ·Power supply NG

Self-diagnostic error code	Contents	Conditions	Probable cause
E*	Slider error	During slider movement, a time overrun occurred (track count search 20 seconds, mandatory movement 10 seconds).	·Slider ceased being able to run ·The slider mechanism is mechanically locked and can no longer move to its target. ·Slider position switch NG ·Flexible cable pulled out ·Drive IC NG ·Power supply abnormal
U1	Misclamp error	①During LD setup, after 1/8th rotation, the track count during 1/8 rotation exceeded 511. ②During startup, the focus was lost once and refocusing was attempted, but the focus could not be locked. ③When the spindle motor rotation is stopped once before CDV A←→V area change, but stop is not carried out within 2.0 seconds, it is determined that there are two discs on each other and clamp error is set. ④Two FG pulses did not come within 800 ms from the start of LD startup. ⑤During CD startup, it took more than 860 ms to reach 416 rpm (CD+LD both mounted detected). ⑥The disc clamp operation did not end within 5 seconds.	·Disc sandwiched ·Disc Shifted ·Spindle motor NG ·Disc scratched or dirty defocused during start up ·Two discs loaded ·PU actuator NG ·Tilt sensor NG ·Tilt neutral NG (tilt base NG)
P*	Spindle error	①During TOC reading with an LD, the spindle servo was not locked within 60 seconds from the start of the spindle run. ②When CAV/CLV determination is not finished within 60 seconds from spindle servo lock. ③The codes could not be read for 10−15 seconds consecutively for an LD or 7−10 seconds for a CD/CDV and the spindle servo was not locked. ④The speed exceeded 2100 rpm during LD startup.	P0 : ·PH code, sub-Q code can not be read ·VCO, PLL Offset out of adjustment ·Disc defect P5 : ·PAL disc, mirror disc, etc. PLAY ·No RF P6 : ·Spindle servo does not lock ·Spindle motor NG
F*	Focus error	①In the "no disc" state, a setup command was received from the mode controller. ②When LD is out of focus when slider is moved to starting position during set up. In case of CD/CDV is NG even after three focus tries. ③During startup, the maximum slider servo duty continued for 3 loops or more.	F5 : ·CD, LD on top of each other ·LD scratched or dirty defocused during slider movement ·Disc NG ·Slider position switch NG F6 : ·Inner edge of disc scratched or dirty ·Slider ran into inner edge mechanical stopper

* Besides the above errors, there is the "U2" communications error (the mode controller could not communicate normally with the mechanism controller). The probable cause is a defective mechanism controller, disconnected cable, etc.

Mechanism mode contents (meaning of * for L* etc.)

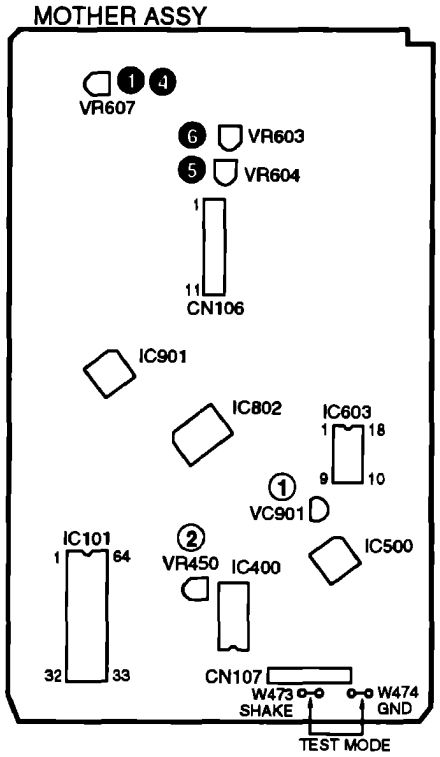
0 : Play 1 : Open 2 : Standby 3 : Clamp 4 : Disc sense
5 : Setup (rotation start) 6 : TOC read 7 : Play 8 : Search F : Recovery mode

* 0 : Normal playing
7 : Moving to play operation

5. ADJUSTMENTS (調整方法)

1. ADJUSTMENT ITEMS AND LOCATION (調整項目と調整位置)

■ Adjustment Points (PCB Part)



■Adjustment Items

[Mechanical Part]

❶ Tilt Offset Adjustment
(チルトオフセット調整)

❷ Tangential Direction Angle Adjustment
(タンジェンシャル傾き調整)

❸ Spindle Motor Centering Adjustment
(スピンドル芯出し調整)

❹ Crosstalk Check and Fine Tilt Offset Adjustment
(クロストーク確認及び、チルトオフセット調整)

❺ Focus Servo Loop Gain Adjustment
(フォーカスサーボループゲイン調整)

❻ Tracking Servo Loop Gain Adjustment
(トラッキングサーボループゲイン調整)

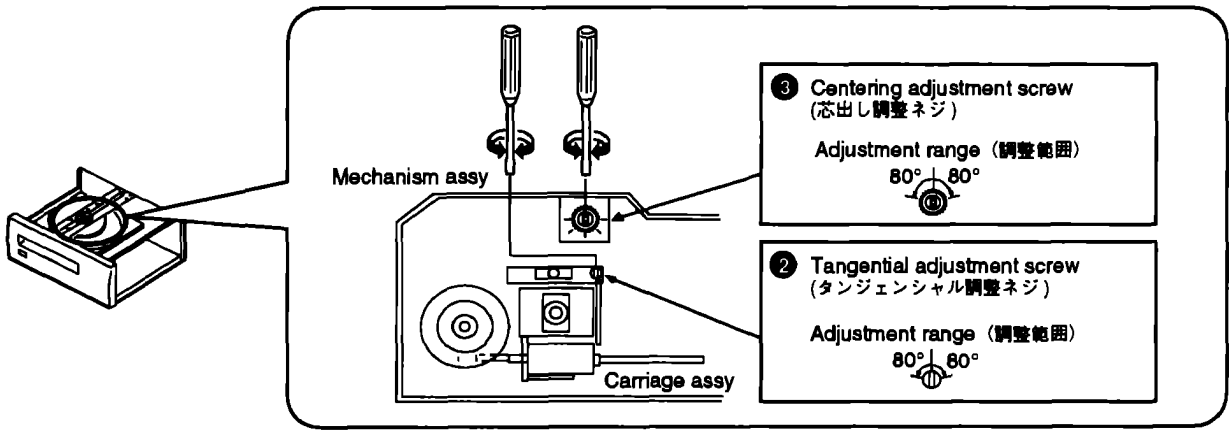
❼ RF Level Check
(RFレベル確認)

[Electrical Part]

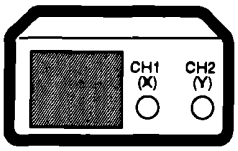
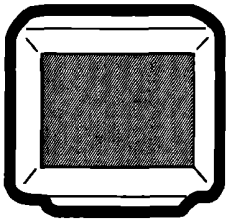
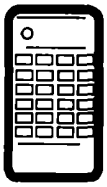
① Master Clock Adjustment
(マスタークロック調整)

② Output Video Level Adjustment
(出力ビデオレベル調整)

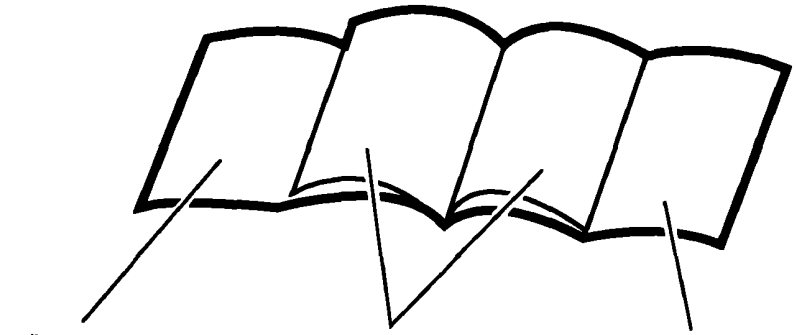
■Adjustment Points (Mechanism Part)



2. JIGS AND MEASURING INSTRUMENTS (調整に必要な治工具類)

CD test disc (YEDS-7)	LD test disc (GGV1012)	⊖ Screwdriver (medium)	⊖ Screwdriver (small)
⊖ Precise screwdriver	⊕ Screwdriver (large)	⊕ Screwdriver (medium)	 Dual-trace oscilloscope (with delay) Frequency band ≧ 40MHz
Frequency counter Display digit ≧ 8-digit	 TV monitor	 Test mode remote control unit (GGF1067)	

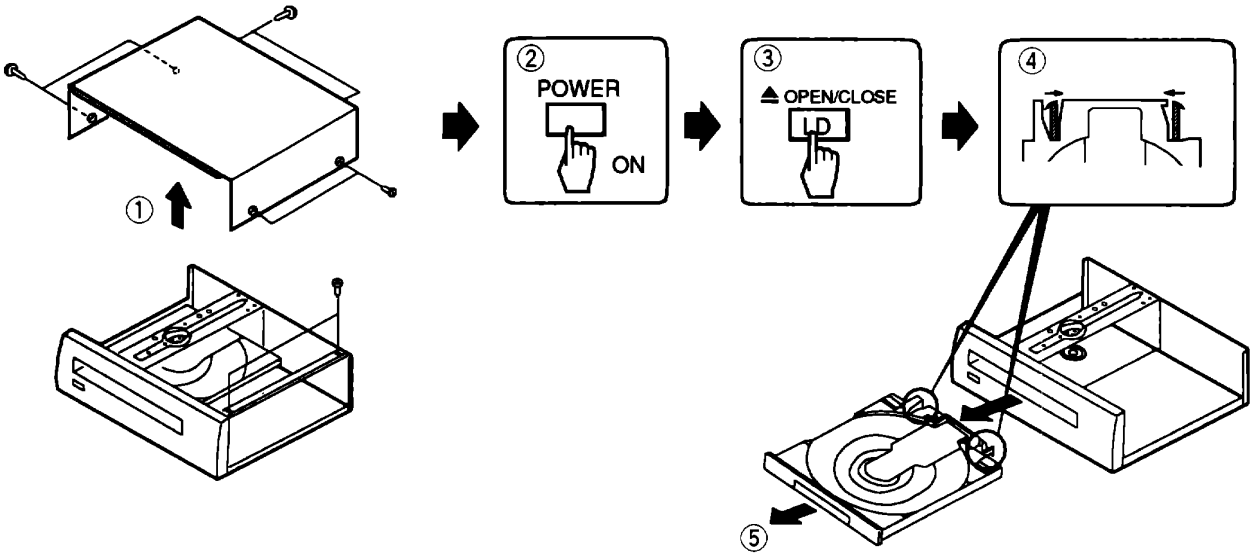
- Use this manual as follows:
(このマニュアルの使い方)


Adjustment Items and Location (調整項目と調整位置)
Adjustment Procedure (調整方法)
Test Mode Remote control operations /TV Monitor Display (テストモード時のサービス用リモコン操作方法とTVモニター表示)

3. DISASSEMBLY/ASSEMBLY (分解/組立の手順)

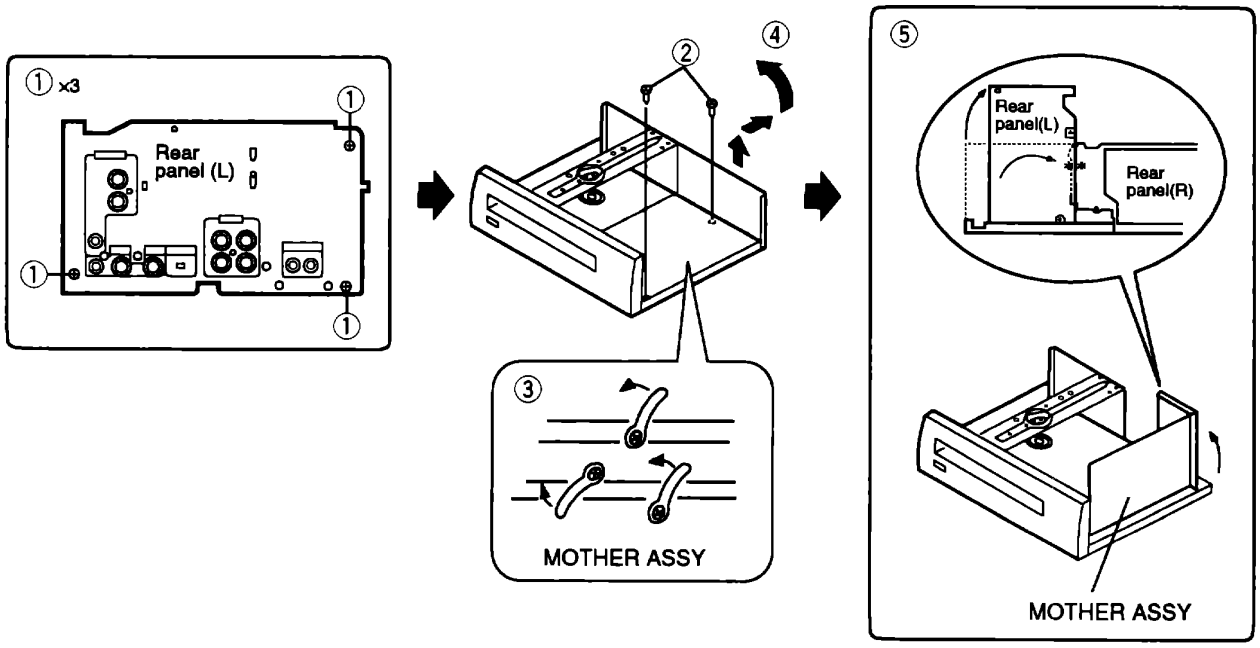
(1) Disc Tray

- Disassembly : ①→②→③→④→⑤
- Assembly : ⑤→①



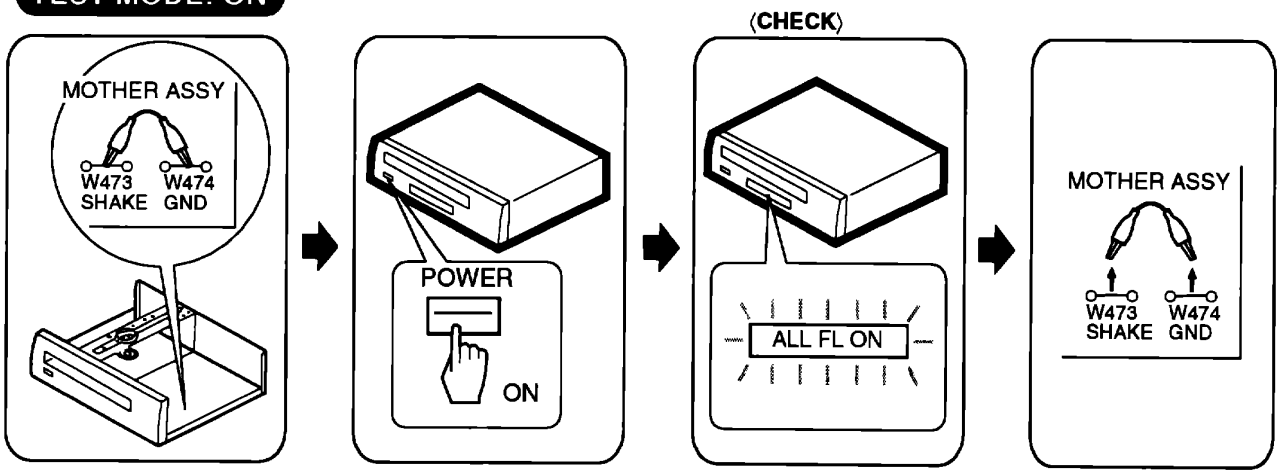
(2) MOTHER ASSY

- Disassembly : ①→②→③→④→⑤
- Assembly : ⑤→④→③→②→①

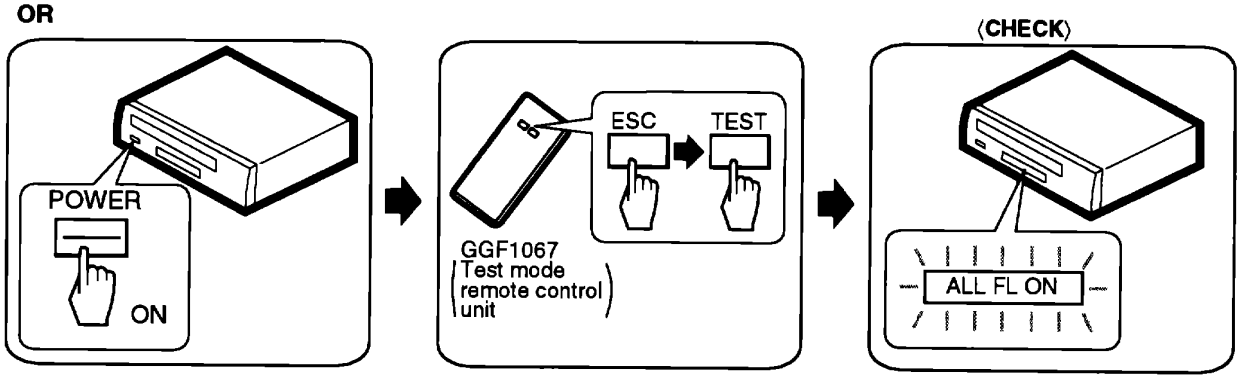


4. TEST MODE (テストモード)

TEST MODE: ON

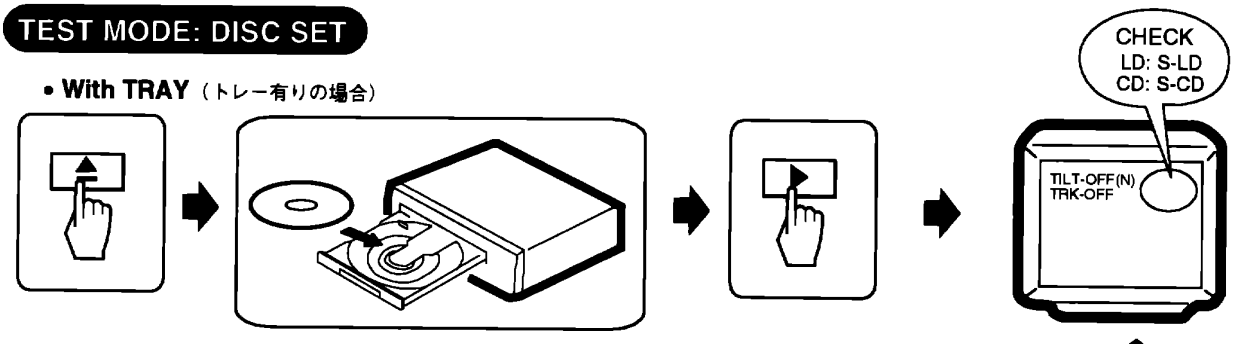


OR

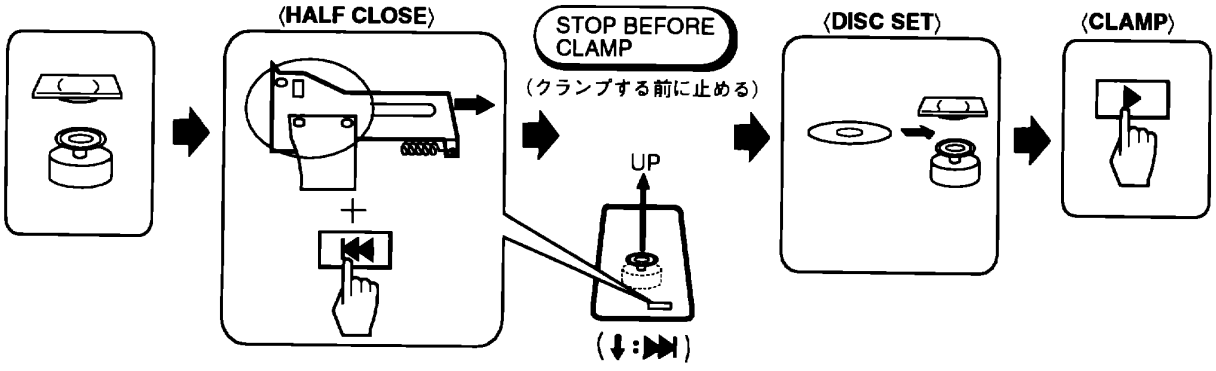


TEST MODE: DISC SET

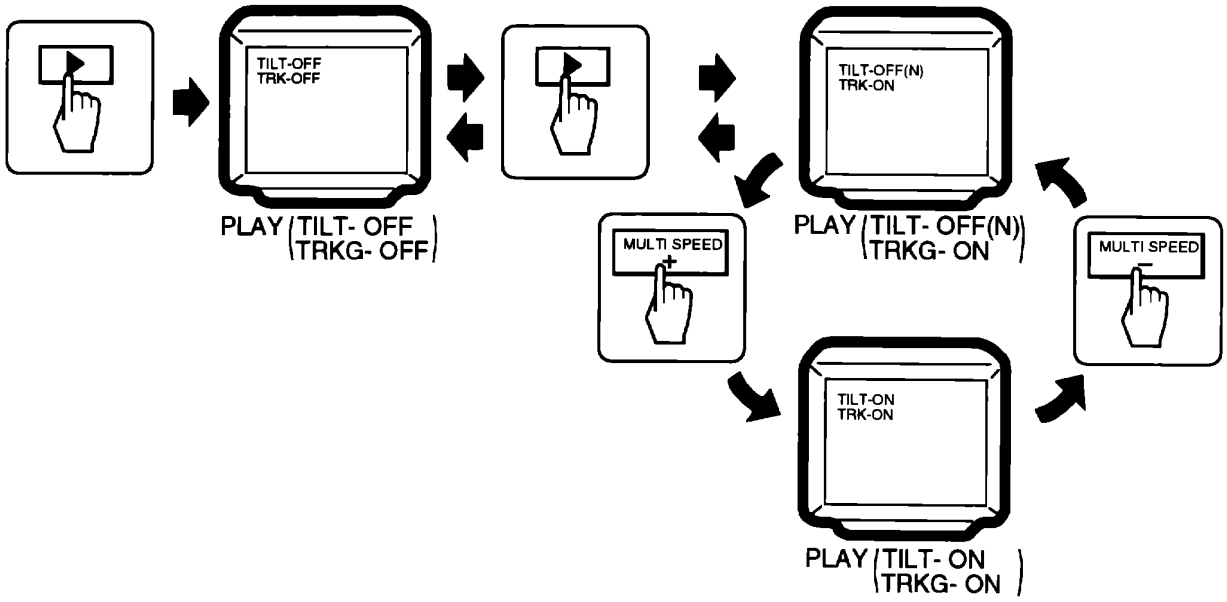
• **With TRAY** (トレー有りの場合)



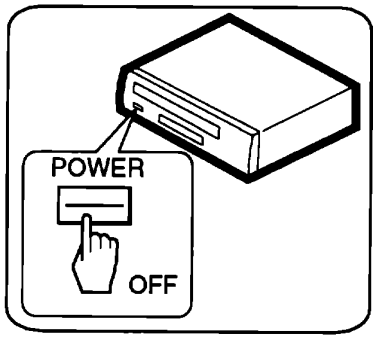
• **No TRAY** (トレー無しの場合)



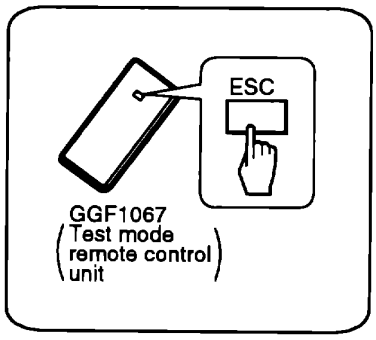
TEST MODE: PLAY



TEST MODE: OFF



OR

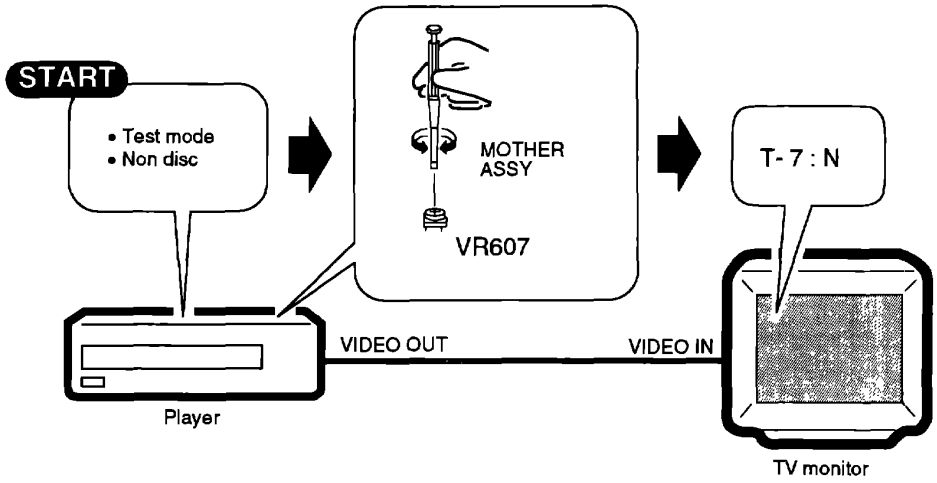


5. NECESSARY ADJUSTMENT POINTS (必要な調整項目)

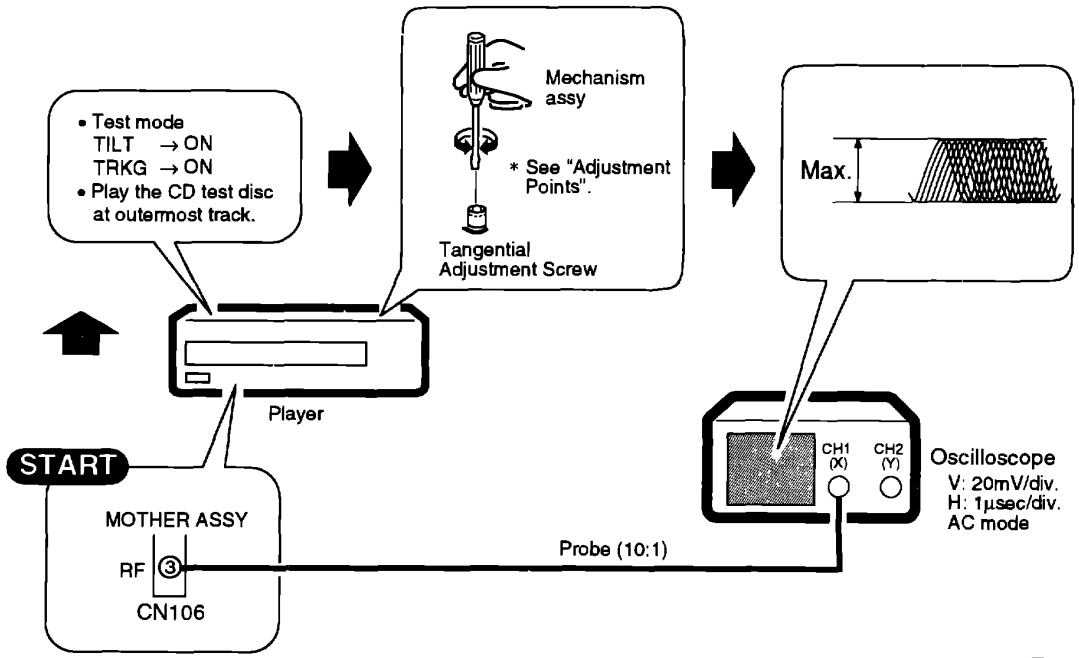
When (このような時)	Adjustment Points	
Exchange pickup (ピックアップを交換したとき)	Mechanical point	❶,❷,❸,❹,❺,❻,❼
	Electric point	————
Exchange spindle motor (スピンドルモータを交換したとき)	Mechanical point	❸,❹
	Electric point	————
Exchange board MOTHER ASSY (マザーボードを交換したとき)	Mechanical point	❶,❹,❺,❻
	Electric point	①,②
Track Skip (音とびをおこすとき)	Mechanical point	❸,❺,❻
	Electric point	————
Slow Search (サーチに時間がかかる) Slow Start (プレイに時間がかかる)	Mechanical point	❸,❺,❻
	Electric point	————
	Mechanical point	
	Electric point	
	Mechanical point	
	Electric point	

6. MECHANICAL ADJUSTMENT (機構系の調整)

❶ Tilt Offset Adjustment
(チルトオフセット調整)

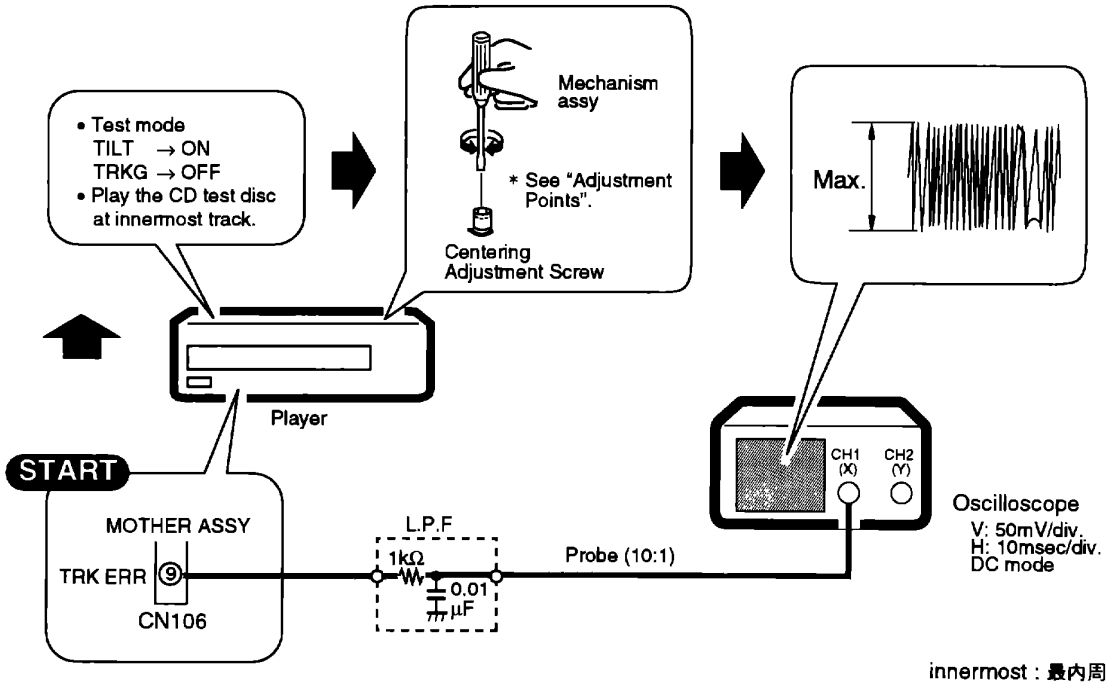


❷ Tangential Direction Angle Adjustment
(タンジェンシャル傾き調整)

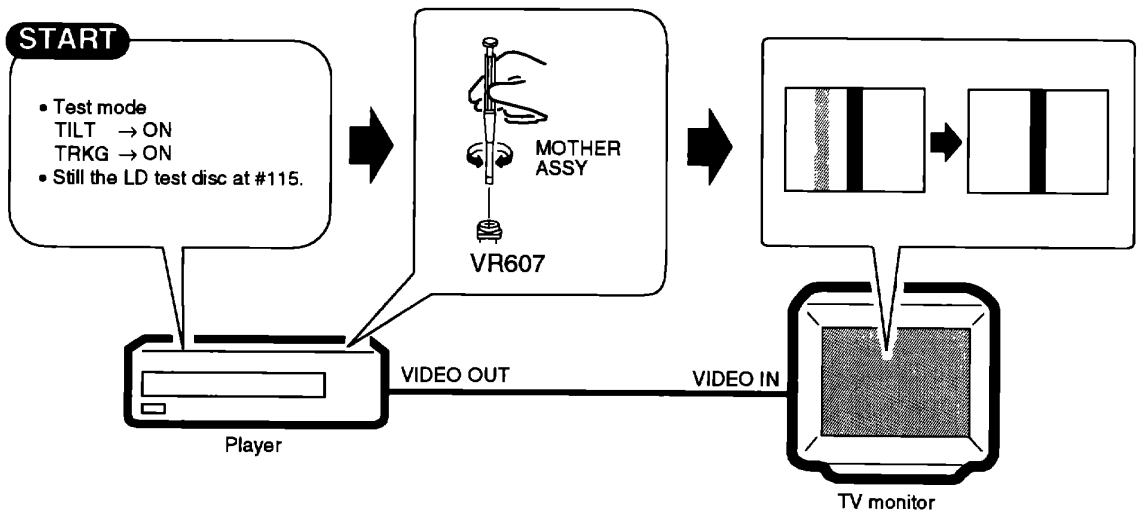


outermost : 最外周

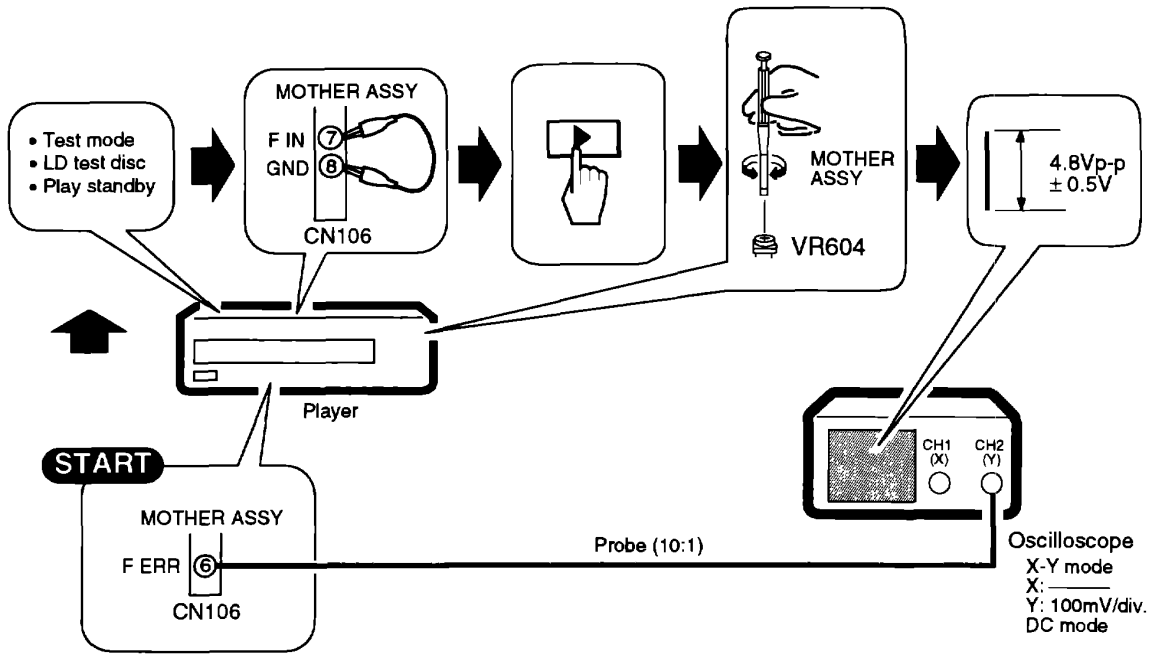
❸ Spindle Motor Centering Adjustment
（スピンドル芯出し調整）



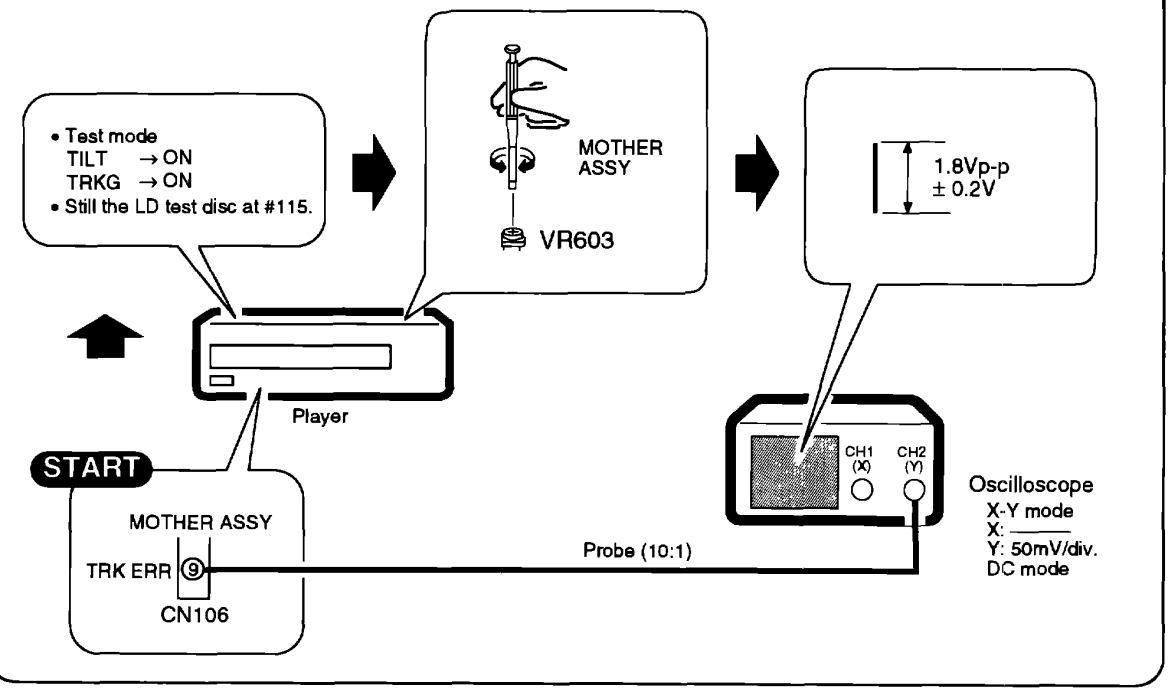
❹ Crosstalk Check and Fine Tilt Offset Adjustment
（クロストーク確認及び，チルトオフセット調整）



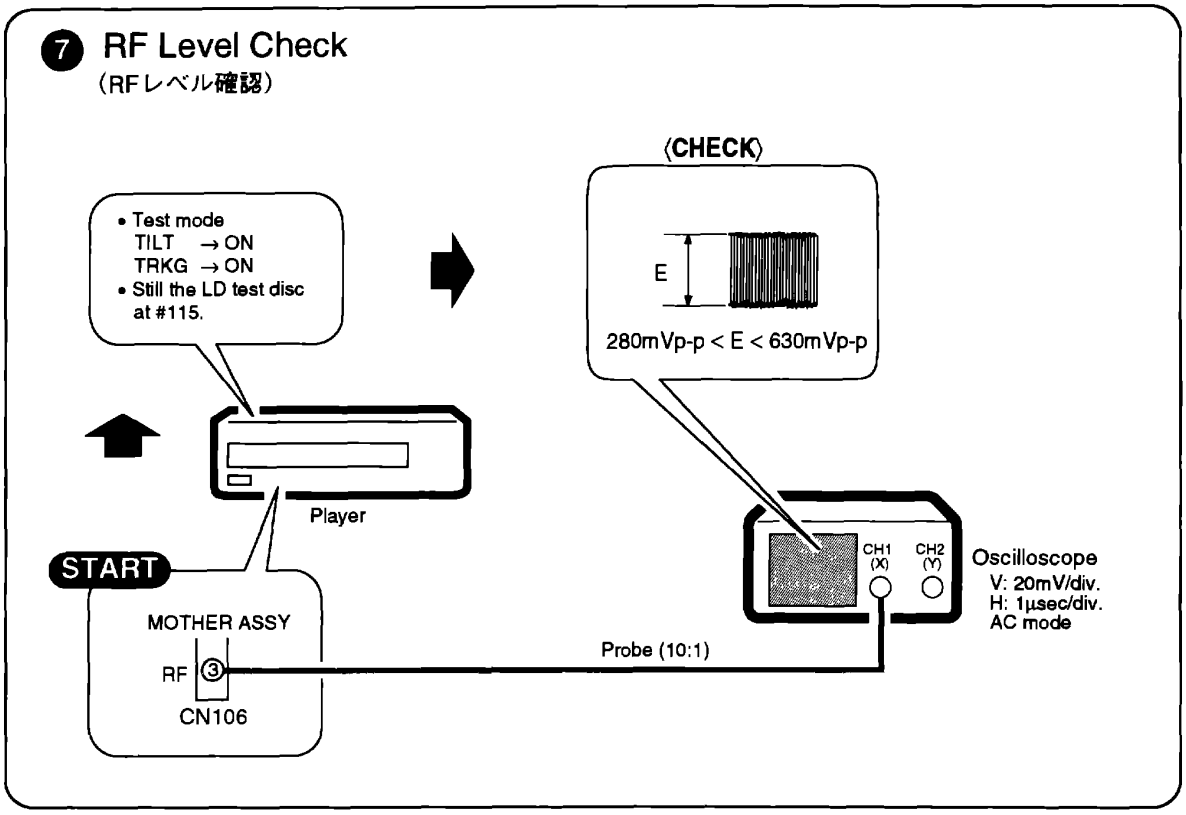
5 Focus Servo Loop Gain Adjustment
（フォーカスサーボループゲイン調整）



6 Tracking Servo Loop Gain Adjustment
（トラッキングサーボループゲイン調整）

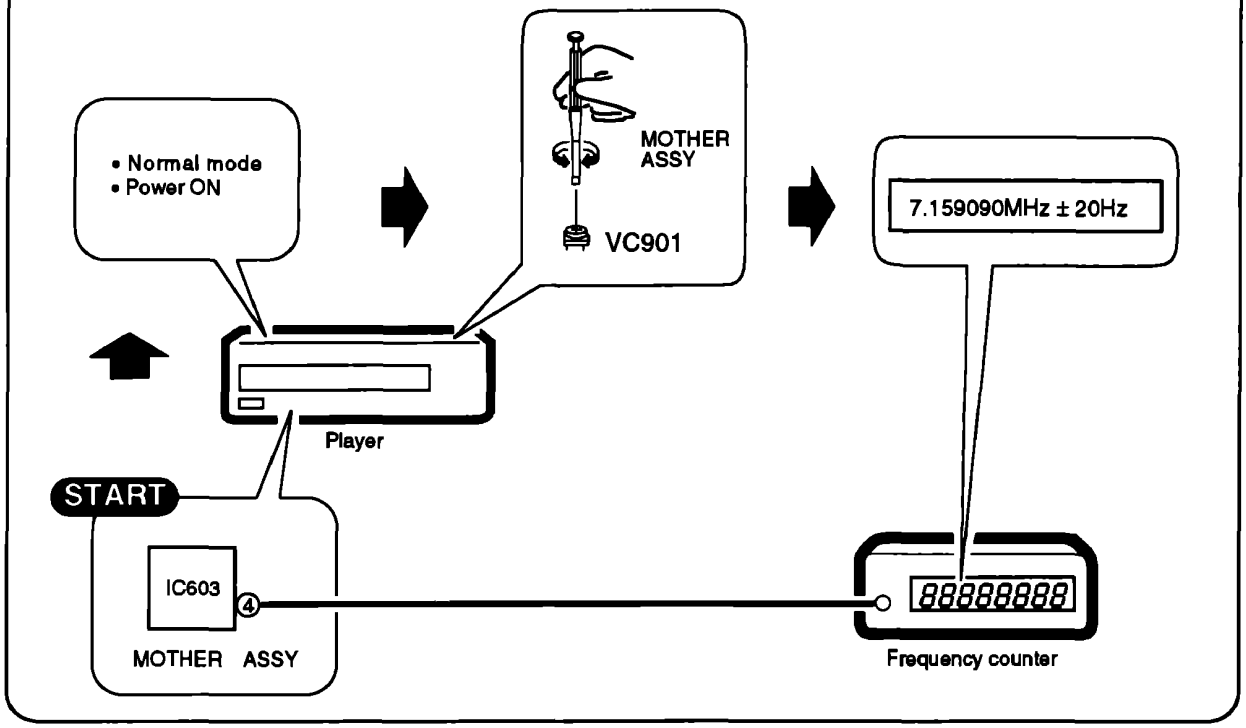


7 RF Level Check
(RFレベル確認)

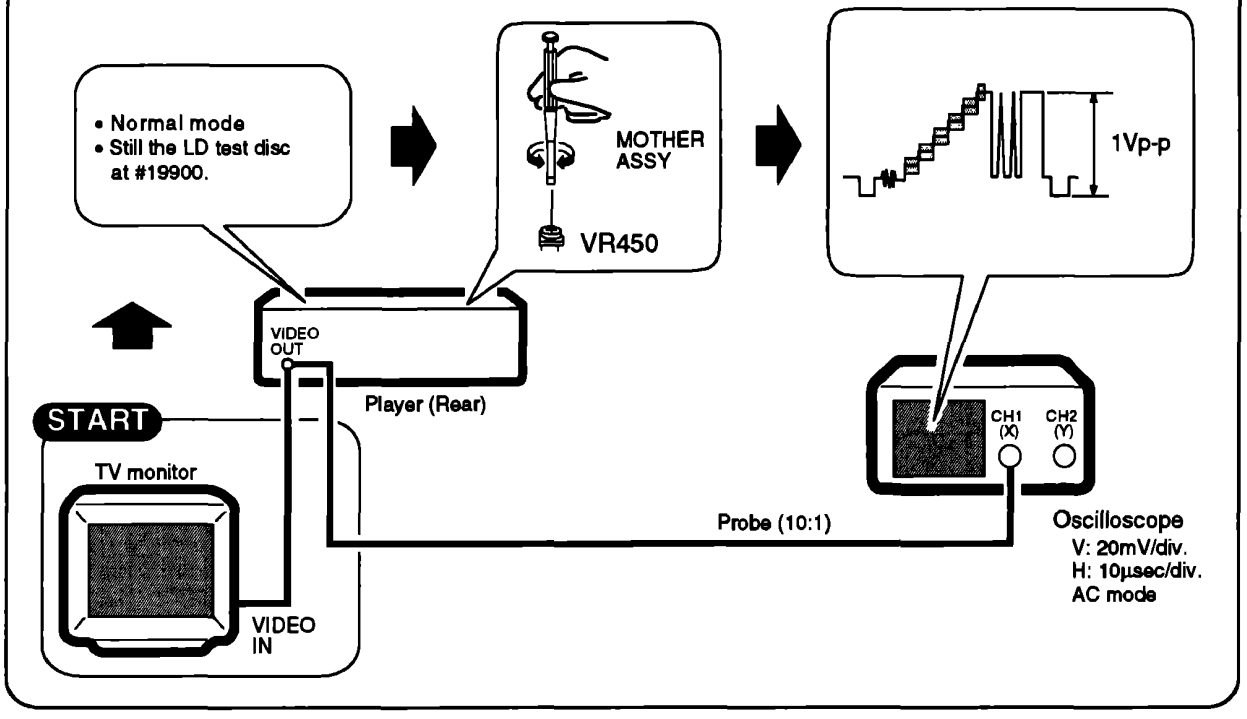


7. ELECTRICAL ADJUSTMENT (電気系の調整)

① Master Clock Adjustment
(マスタークロック調整)

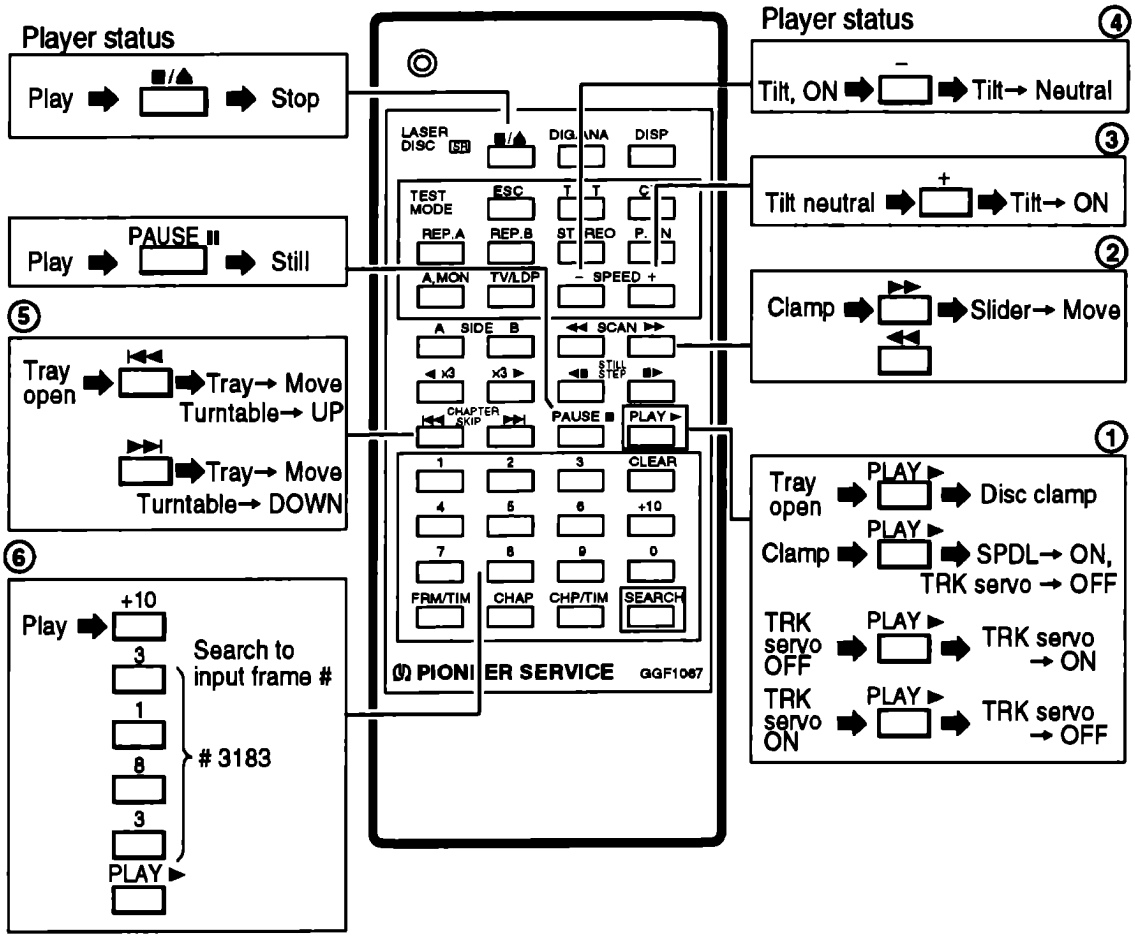


② Output Video Level Adjustment
(出力ビデオレベル調整)

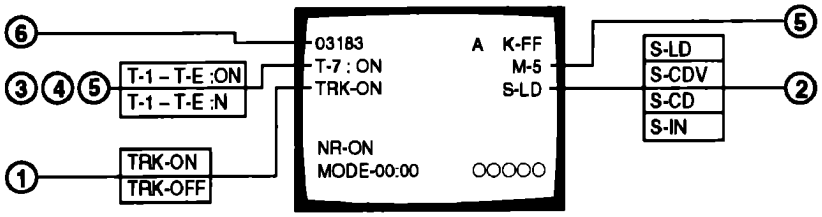


8. OPERATIONS IN THE TEST MODE（テストモード時のサービス用リモコン操作方法）

■ Test Mode Remote Control Unit (GGF1067)



■ TV Monitor Display



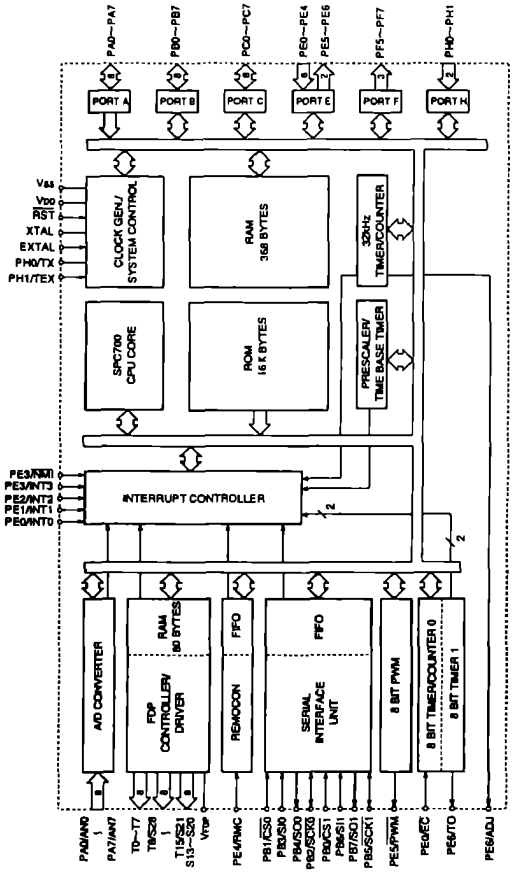
6. IC INFORMATION

■ PDG160B (FLKY ASSY : IC101)

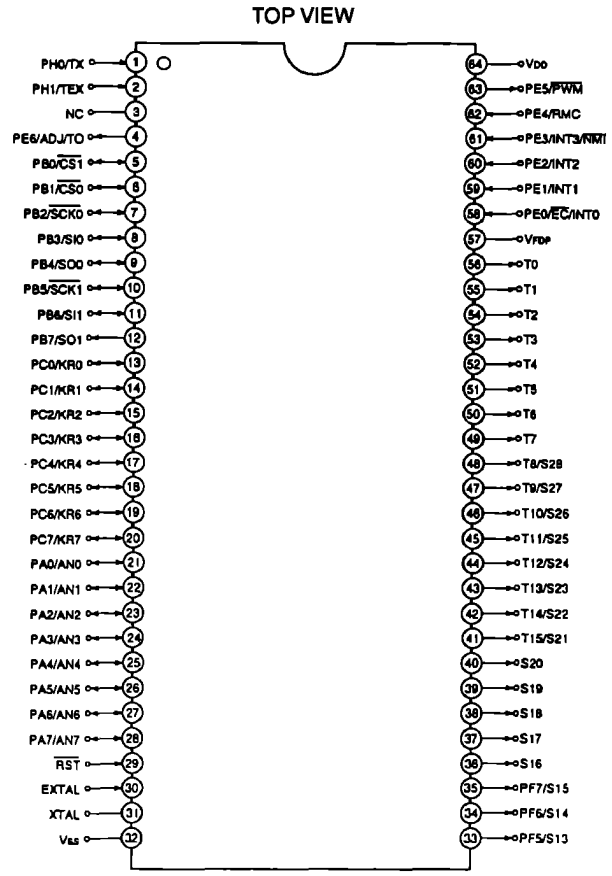
● MODE CONTROL IC

- The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

● Block Diagram



● Pin Assignment



● Pin Functions

Pin name	I/O	Function	
PA0/AN0 ~ PA7/AN7	I/O / analog input	(Port A) The input and output can be specified in units of one bit by an 8-bit input/ output port. Internal pull-up resistors (8) can be specified in units of four bits by software.	Analog input pins (8) of A/D converter.
PB0/$\overline{CS1}$	I/O / Input	(Port B) The input and output can be specified in units of one bit by an 8-bit input/ output port. Internal pull-up resistors (8) can be specified in units of four bits by software.	Chip select input pin of serial interface (CH1).
PB1/$\overline{CS0}$	I/O / Input		Chip select input pin of serial interface (CH0).
PB2/$\overline{SCK0}$	I/O / I/O		Input/output pin of serial clock (CH0).
PB3/SI0	I/O / Input		Input pin of serial data (CH0).
PB4/SO0	I/O / Output		Output pin of serial data (CH0).
PB5/$\overline{SCK1}$	I/O / I/O		Input/output pin of serial clock (CH1).
PB6/SI1	I/O / Input		Input pin of serial data (CH1).
PB7/SO1	I/O / Output		Output pin of serial data (CH1).

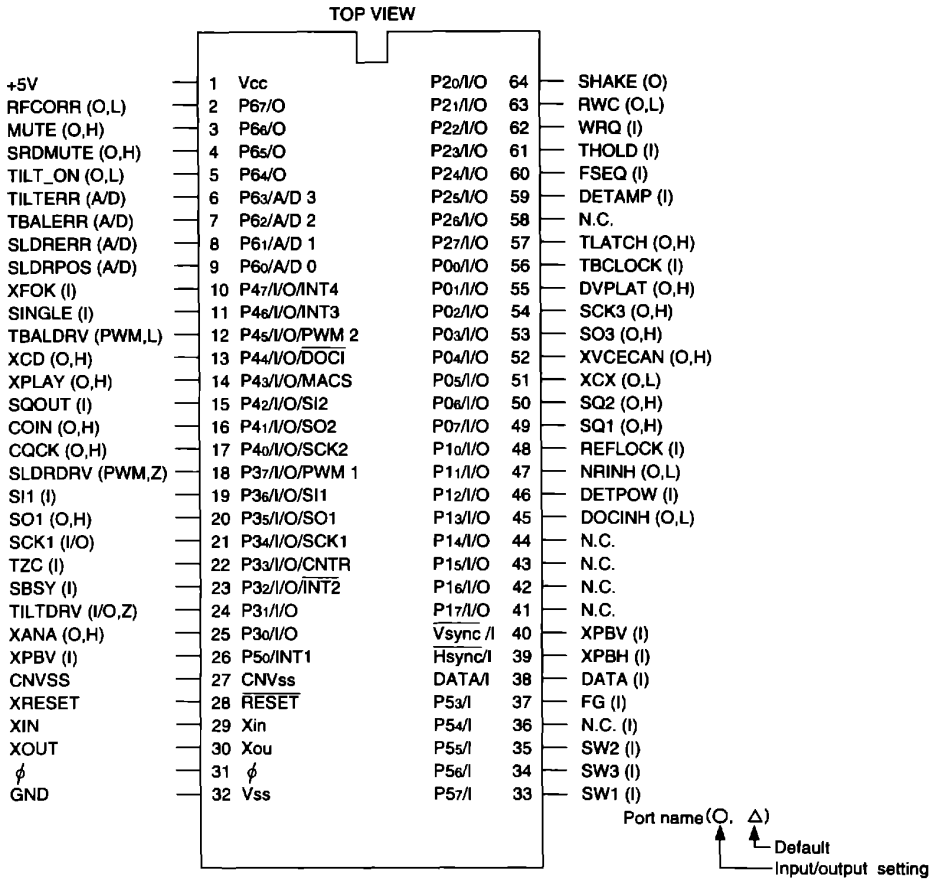
PDG160B

Pin name	I/O	Function	
PC0/KR0 ~ PC7/KR7	I/O / Input	(Port C) The input and output can be specified in units of one bit by an 8-bit output port. This port can drive a sink current of 12 mA. Internal pull-up resistors (8) can be specified in units of four bits by software.	Key return input pin during key scanning using an FDP segment signal.
PE0/INT0/$\overline{EC}$	Input / Input / Input	(Port E) Low-order five bits are a 7-bit input-only port, and high-order two bits are a 7-bit output-only port.	External event input pin (1) of timer and counter.
PE1/INT1	Input / Input		External interrupt request input pins (4).
PE2/INT2	Input / Input		
PE3/INT3/$\overline{NMI}$	Input / Input / Input		Non-maskable interrupt request pin.
PE4/RMC	Input / Input		Input pin of remote control receive circuit.
PE5	Output		8-bit PWM output pin.
PE6/ADJ/TO	Output		Rectangular wave output signal of timer and counter. Frequency-division output pin of 32-kHz oscillation.
PF5/S13 ~ PF7/S15	Output / Output	(Port F) 3-bit output pin (3)	FDP segment signal output pin.
S16~S20	Output	FDP segment signal output pin.	
T8/S28 ~ T15/S21	Output / Output	Output pin of FDP timing signal and segment signal.	
T0~T7	Output	Output pin of FDP timing signal.	
V_{FDP}		FDP voltage supply pin when internal resistor is specified by mask option.	
EXTAL	Input	Crystal connection pin for system clock oscillation. A clock should be input to the EXTAL pin when it is supplied from the outside. In this case, a clock with opposite phase should be input to the XTAL pin.	
XTAL	Output		
PH1/TEX	Input / Input	(Port H) 2-bit input pin (2)	Crystal connection pin for 32-kHz timer and counter clock oscillation. A 32-kHz crystal oscillator is put between TEX and TX pins. When this signal is used as an event input, the clock source should be connected to the TEX pin, and the TX pin should be opened.
PH0/TX	Input / Output		
$\overline{RST}$	Input	Low-level active system reset pin. The $\overline{RST}$ pin is an input pin.	
NC		NC pin. This pin should be connected to V_{DD} during normal operation.	
V_{DD}		Power supply connection pin.	
V_{SS}		Ground	

■ PD0232A (MOTHER ASSY : IC101)

• MECHANISM CONTROL IC

• Pin Assignment



• Pin Functions

No.	Pin name	I/O	Function
1	Vcc	I	Power supply connection pin 5 V ±10% applied.
2	RFCORR	O	RF collection switch signal output pin. "H"=gain up CD, CDV – : Low, gain raised with CAV internal adjustment, otherwise high.
3	MUTE	O	Audio system audio mute control signal output pin. "L"=mute off, "H"=mute
4	SRDMUTE	O	AC3 mute control signal output pin. Mute off only during play. "L"=mute off, "H"=Mute
5	TILT_ON	O	Tilt operating data. (for debugging) "H"=operating For tilt operation verification
6	TILTERR	I A/D	This signal is converted from analog to digital and used as tilt servo control input. The tilt motor is controlled to make this signal 2.5 V.
7	TBALERR	I A/D	Tracking balance error signal input pin. This signal is converted from analog to digital and used for tracking offset control input.
8	SLDERR	I A/D	This signal is converted from analog to digital and used for tracking offset control input. The slide motor is controlled to make this signal 2.5 V.
9	SLDPOS	I A/D	Pickup position detection switch input pin. The switches are resistance divided, the A/D input value read in, and the position detected.
10	XFOK	I	Focus servo lock signal input pin. "L"=lock, "H"=unlock Used for focus servo lock detection.
11	SINGLE	I	Uses the rear panel ATT switch in single mode and communicates this data to the mode controller. "L"=single, "H"=normal
12	TBAL DRV	O PMW	PWM outputs the tracking offset for use as the auto tracking offset. 910μsec, 3 – value control: H, L, Z
13	XCD	O	LD/CD switching signal output pin. "L"=CD, "H"=LD
14	XPLAY	O	Spindle servo signal output pin. "L"=servo underway, "H"=acceleration, brake, stop underway
15	SQOUT	I	Input pin for command data from DSP. SUBQ is read out.

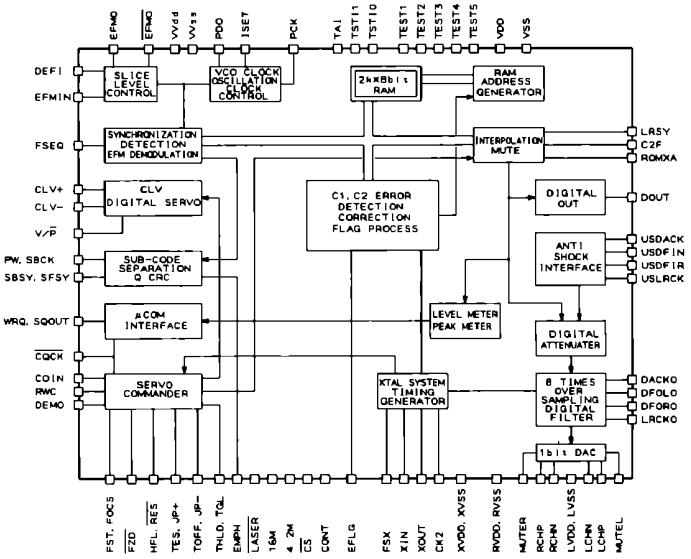
PD0232A

No.	Pin name	I/O	Function
16	COIN	O	Pin for command data output to DSP
17	CQCK	O	DSP read/write command clock output pin. Rising edge read in.
18	SLDDRV	O PMW	Slider control signal output pin. 5V=FWD, 0V=REV, 2.5V=STOP 910µsec, 3 – value control: H, L, Z
19	SI1	I	Pin for data input from mode controller IC
20	SO1	O	Output for serial data to mode controller IC
21	SCK1	I/O	Mode controller IC and serial communications clock. Other than when communicating with mode controller IC, input mode.
22	TZC	I INT	Tracking error zero cross signal input pin. This signal monitored for misclamping detection and tracking count search.
23	SBSY	I	Not used
24	TILT DRV	I/O	Load/tilt control output pin 0,5 V – tray in, out/tilt down, up 2.5V – stop tilt drive PWM output for tilt servo.
25	XANA	O	Digital analog audio switching signal output pin. "L"=analog, "H"=digital
26	XPBV	I	LD/CDV playback vertical sync signal input pin. "L"=vertical sync underway
27	CNVSS	I	A/D conversion ground
28	XRESET	I	Reset signal input pin. "L"=reset, "H"=reset off Controlled by mode controller.
29	XIN	I	9MHz clock oscillation input pin
30	XOUT	O	9MHz clock oscillation output pin
31	N.C.	O	Dedicated output pin, so other uses prohibited.
32	GND	I	Ground
33	SW1	I	Loading/tilt position detection switch input pin
34	SW3	I	Loading/tilt position detection switch input pin
35	SW2	I	Loading/tilt position detection switch input pin
36	N.C.	I	Not used
37	FG	I	Spindle motor FG signal input pin. 16 pulses per rotation, used within microcomputer frequency divided by 2.
38	DATA	I	Mechanism controller built – in Phillips code/decode input pin
39	XPBH	I	Playback H – sync input For Phillips coding/decoding
40	XPBV	I	Playback V – sync input For Phillips coding/decoding
41	N.C.	O	Not used
42	N.C.	O	Not used
43	N.C.	O	Not used
44	N.C.	O	Not used
45	DOCINH	O	3 – value clamp pulse and clamp killer circuit control
46	DETPOW	I	Used as power supply abnormality signal input port. "L"=normal, "H"=abnormal
47	NRINH	O	VDEM noise reduction control output pin. "L"=normal, "H"=no NR
48	REFLOCK	I	Input pin for reference signal from DVP. "L"=phase not aligned, "H"=phase aligned
49	SQ1	O	Analog audio switching signal output pin. 1/L "L"=squelch off, "H"=squelch on
50	SQ2	O	Analog audio switching signal output pin. 2/R "L"=squelch off, "H"=squelch on
51	XCX	O	Analog audio CX noise reduction switching signal output pin. "L"=CX on, "H"=CX off
52	XVCECAN	O	Voice cancel output "L"=cancel on, "H"=cancel off
53	SO3	O	Serial 3 data signal output pin. The serial signals are common and are distinguished with the latch signals (DVPLAT, TLAT).
54	SCK3	O	Serial 3 clock signal output pin
55	DVPLAT	O	PD0192 serial latch signal output pin. Latch at rising edge
56	TBC LOCK	I	Spindle power on detection signal input pin. "L"=overcurrent, "H"=normal
57	T LATCH	O	Latch output of serial control for DAC & digital filter IC PD2026A. Latches at falling edge
58	N.C.	O	Not used
59	DETAMP	I	Spindle overcurrent detection signal input pin "L"=overcurrent "H"=normal
60	FSEQ	I	Subcode sync match detection signal input pin "L"=does not match, "H"=matches
61	THOLD	I	Track jump accelerating/decelerating signal input pin "L"=neither, "H"=accelerating/decelerating
62	WRQ	I	Subcode Q read OK signal input pin "L"=NG, "H"=OK This pin goes high when the subcode Q data passes the CRC check.
63	RWC	O	DSP read/write command signal output pin. "L"=read, "H"=write
64	SHAKE	I/O	Handshake signal pin for data communications with mode controller IC. This pin is a bidirectional data pin and its input and output are controlled by the respective microcomputers.

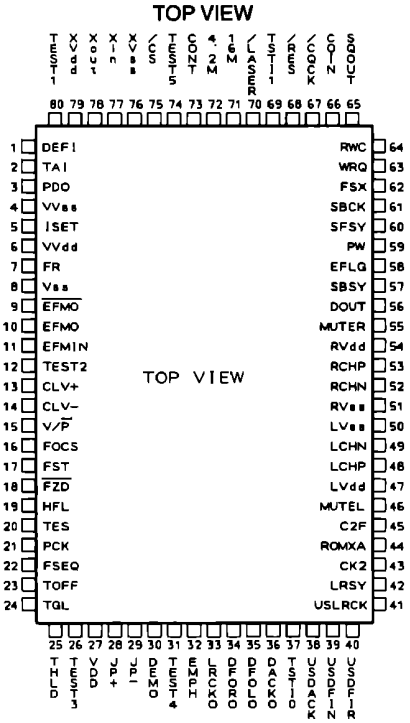
■ LC78620E (MOTHER ASSY : IC802)

● SERVO CONTROL IC

● Block Diagram



● Pin Assignment



● Pin Functions

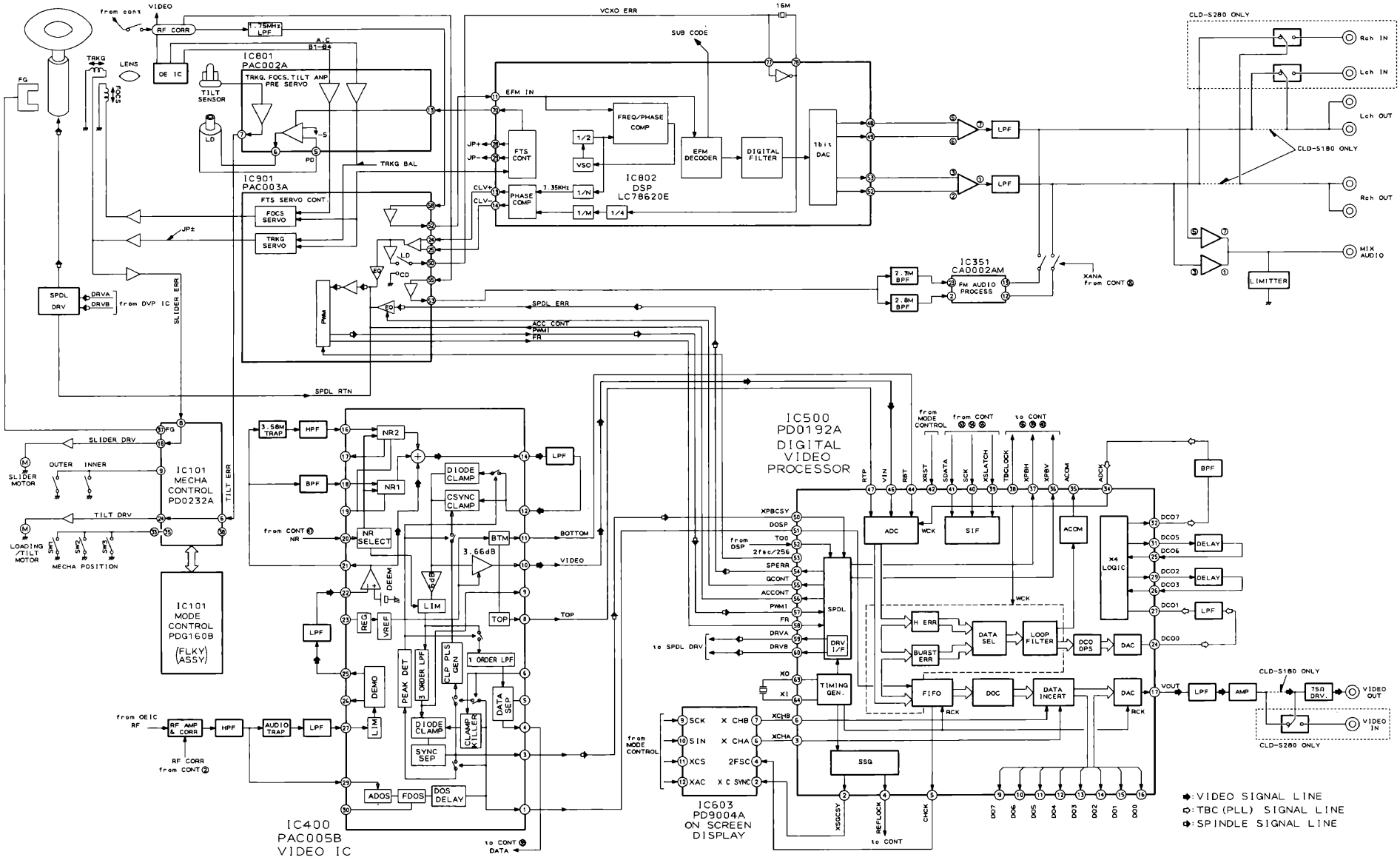
No.	Pin name	I/O	Function	
1	DE-FI	I	Defect detection signal (DEF) input pin. (Low when not used.)	
2	TAI	I	For PLL use	Test input pin. Pull-down resistor built-in.
3	PDO	O		Phase comparison output pin for external VCO control.
4	V Vss			Power pin for internal VCO. Usually, set to 0 V.
5	ISET	AI		Resistor connection pin for PDO output current adjustment.
6	V VDD			Grounding pin for internal VCO. Usually, set to 5 V.
7	FR	AI		This pin is used for VCO frequency range adjustment.
8	Vss		Digital system grounding pin. Usually, set to 0 V.	
9	$\overline{\text{EFMO}}$	O	For slice level control use.	EFM signal inversion output pin.
10	EFMO	O		EFM signal output pin.
11	EFMIN	I		EFM signal input pin.
12	TEST2	I	Test input pin. Pull-down resistor built-in.	
13	CLV+	O	Output pins for spindle servo control. Accelerated when the CLV+ pin is high,	
14	CLV-	O	and decelerated when the CLV- pin is high. The ternary value can be output using a command.	
15	V/$\overline{\text{P}}$	O	Automatic selection monitor output pin of rough servo and phase control. This pin selects the rough servo when high and selects the phase control mode when low.	
16	FOCS	O	Focus servo ON/OFF output pin. Focus servo ON when low.	
17	FST	O	Focus start pulse output pin. Open-drain output.	
18	$\overline{\text{F2D}}$	I	Focus error zero-cross signal input pin. (Low when not used.)	
19	HFL	I	Track detection signal input pin. Schmitt input	
20	TES	I	Tracking error signal input pin. Schmitt input.	
21	PCK	O	Clock monitor pin for EFM data reproduction. 4.3218 MHz during phase locking.	
22	FSEQ	O	Sync signal detection output pin. Set high when the sync signal detected from an EFM signal coincides with an internally produced sync signal.	
23	TOFF	O	Tracking OFF output pin.	
24	TGL	O	Tracking gain selection output pin. This pin raises the gain when low.	
25	THLD	O	Tracking hold output pin.	
26	TEST3	I	Test input pin. A pull-down resistor built-in.	

LC78620E

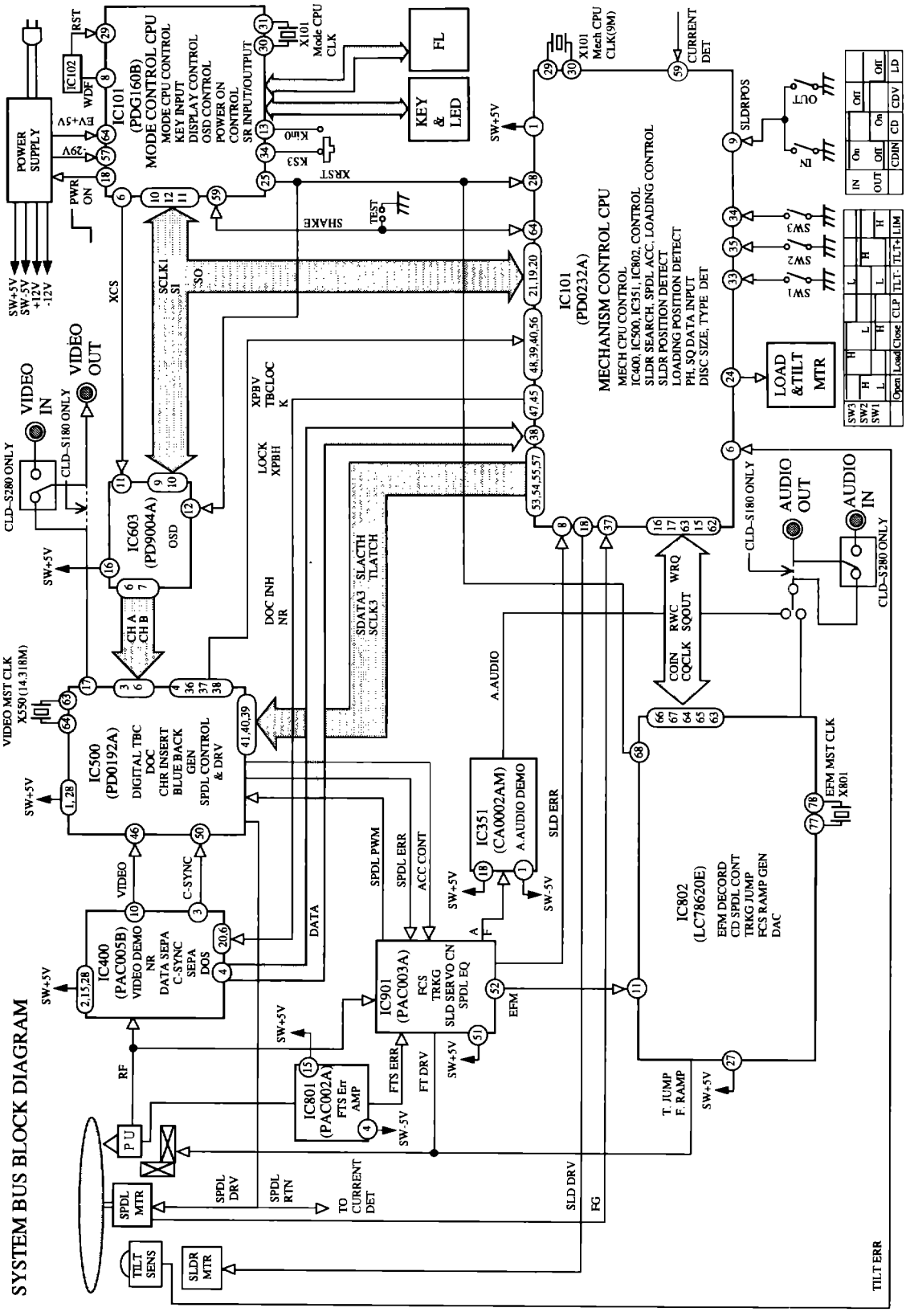
No.	Pin name	I/O	Function			
27	V_{DD}		Digital system power pin. Usually, set to 5 V.			
28	JP+	O	Track jump output pin. Accelerated during a jump in the outer-circumference direction when the JP+ pin is high. Accelerated during a jump in the inner circumference direction or decelerated during a jump in the outer circumference direction when the JP- pin is high. The ternary value can be output using a command.			
29	JP–	O				
30	DEMO	I	Sounding function input pin for set adjustment process. A pull-down resistor built-in.			
31	TEST4	I	Test input pin. A pull-down resistor built-in.			
32	EMPH	O	Deemphasis monitor output pin. A deemphasis disc is in the playback state when high.			
33	LRCKO	O	Digital filter output	Word clock output		
34	DFORO	O		R-channel data output		
35	DFOLO	O		L-channel data output		
36	DACKO	O		Bit clock output		
37	TST10	O	Test output pin. Open (Usually, output when low.)			
38	USDACK	I	Antishock-compatible input. (Low when not used.)	Bit clock input		
39	USDFIN	I		L/R-channel data		
40	USDFIR	I		Test input pin. Usually, set low.		
41	USLRCK	I	Antishock-compatible input	Word clock input. (Set low when not used.)		
42	LRSY	O	ROMXA-compatible output	L/R clock output		
43	CK2	O		Bit clock output	DACLK (During RES)	Polarity inversion (CK2CON mode)
44	ROMXA	O		Data output	Data (interpolation)(During RES)	ROMOUT (ROMKA mode)
45	C2F	O		C2 flag output		
46	MUTEL	O	For 1bit DAC use	Mute output pin		
47	L V_{DD}			L-channel power pin. Usually, set to 5 V.		
48	LCHP	O		L-channel P output pin		
49	LCHN	O		L-channel N output pin		
50	LV_{SS}			L-channel grounding pin. Usually, set to 0 V.		
51	RV_{SS}			R-channel grounding pin. Usually, set to 0 V.		
52	RCHN	O		R-channel N output pin		
53	RCHP	O		R-channel P output pin		
54	RV_{DD}			R-channel power pin. Usually, set to 5 V.		
55	MUTER	O		Mute output pin		
56	DOUT	O	Digital output pin			
57	SBSY	O	Cycle signal output pin of subcode block			
58	EFLG	O	Single and double correction monitor pin of C1 and C2			
59	PW	O	Output pin of subcodes P, Q, R, S, T, U, and W			
60	SFSY	O	Cycle signal output pin of subcode frame. Falls when a subcode enters the standby mode.			
61	SBCK	I	Subcode read clock input pin. Schmitt input			
62	FSX	O	Output pin of 7.35-kHz sync signal divided from crystal oscillation			
63	WRQ	O	Output standby output pin of subcode Q			
64	RWC	I	Read/write control input pin			
65	SQOUT	O	Subcode Q output pin			
66	COIN	I	Command input pin from microcomputer			
67	$\overline{CQCK}$	I	Subcode fetch clock input pin from command input fetch clock or SQOUT. Schmitt input			
68	$\overline{RES}$	I	Chip select input pin. Set low once during the power-on sequence.			
69	TST11	O	Test input pin. Open (A low signal is usually output.)			
70	$\overline{LASER}$	O	Laser ON/OFF output pin. This signal is controlled by the serial data command from a microcomputer.			
71	16M	O	16.9344-MHz output pin. 33.8688 MHz is output in only the PB mode at 4 times normal speed.			
72	4.2M	O	4.2336-MHz output pin			
73	CONT	O	Reserved output pin. This signal is controlled by the serial data command from a microcomputer.			
74	TEST5	I	Test input pin. A pull-down resistor built-in.			
75	$\overline{CS}$	I	Chip select input pin. A pull-down resistor built-in.			
76	XV_{SS}		Grounding pin for crystal oscillation. Usually, set to 0 V.			
77	X_{IN}	I	Connection pins of 16.9344-MHz crystal oscillator.			
78	X_{OUT}	O	A 33.8688-MHz crystal oscillator is connected in the PB system at 4-times normal speed.			
79	XV_{DD}		Power pin for crystal oscillation. Usually, set to 5 V.			
80	TEST1	I	Test input pin. A pull-down resistor built-in.			

7. BLOCK DIAGRAM

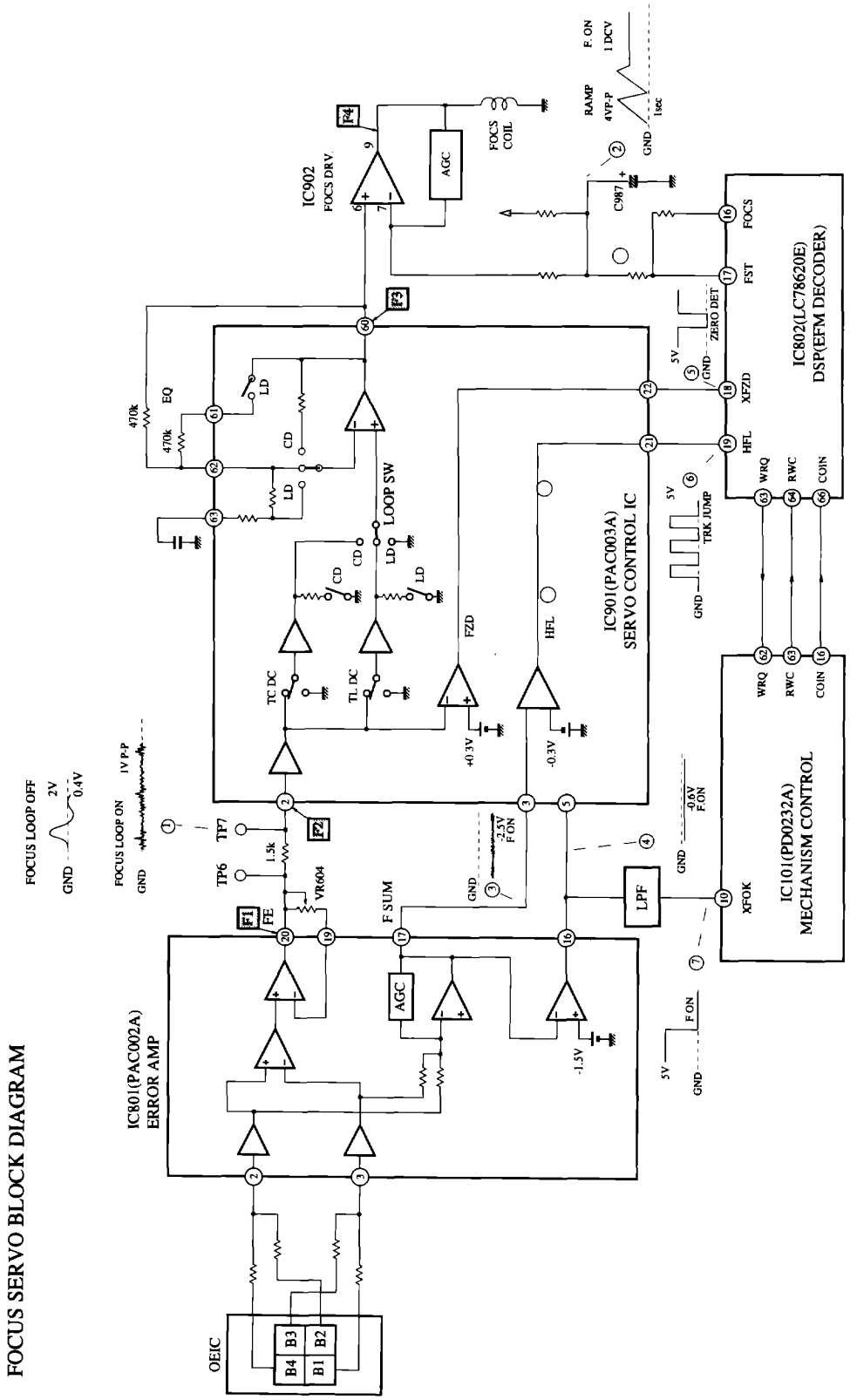
7.1 OVERALL BLOCK DIAGRAM



7.2 SYSTEM BUS BLOCK DIAGRAM



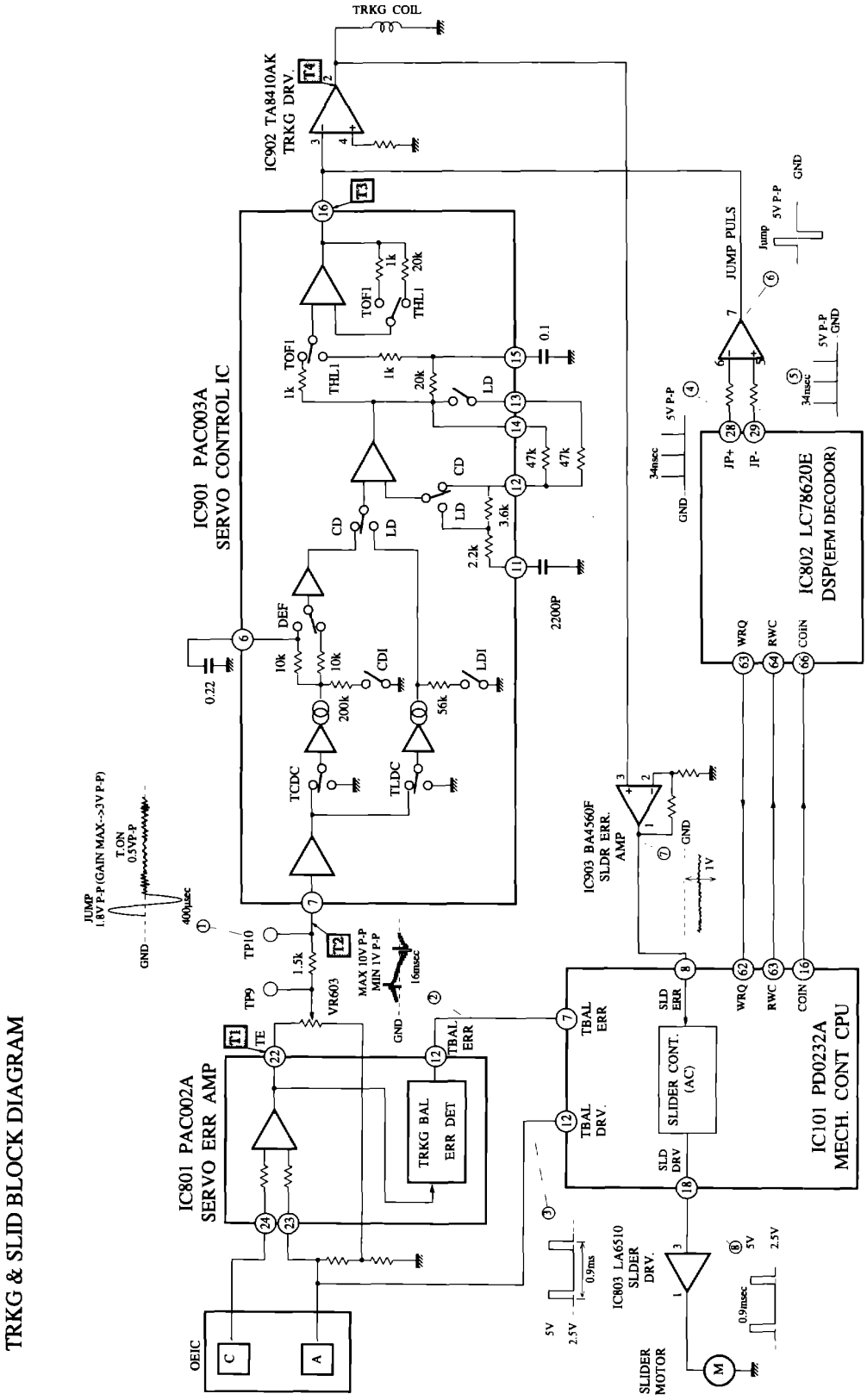
7.3 FOCUS SERVO BLOCK DIAGRAM



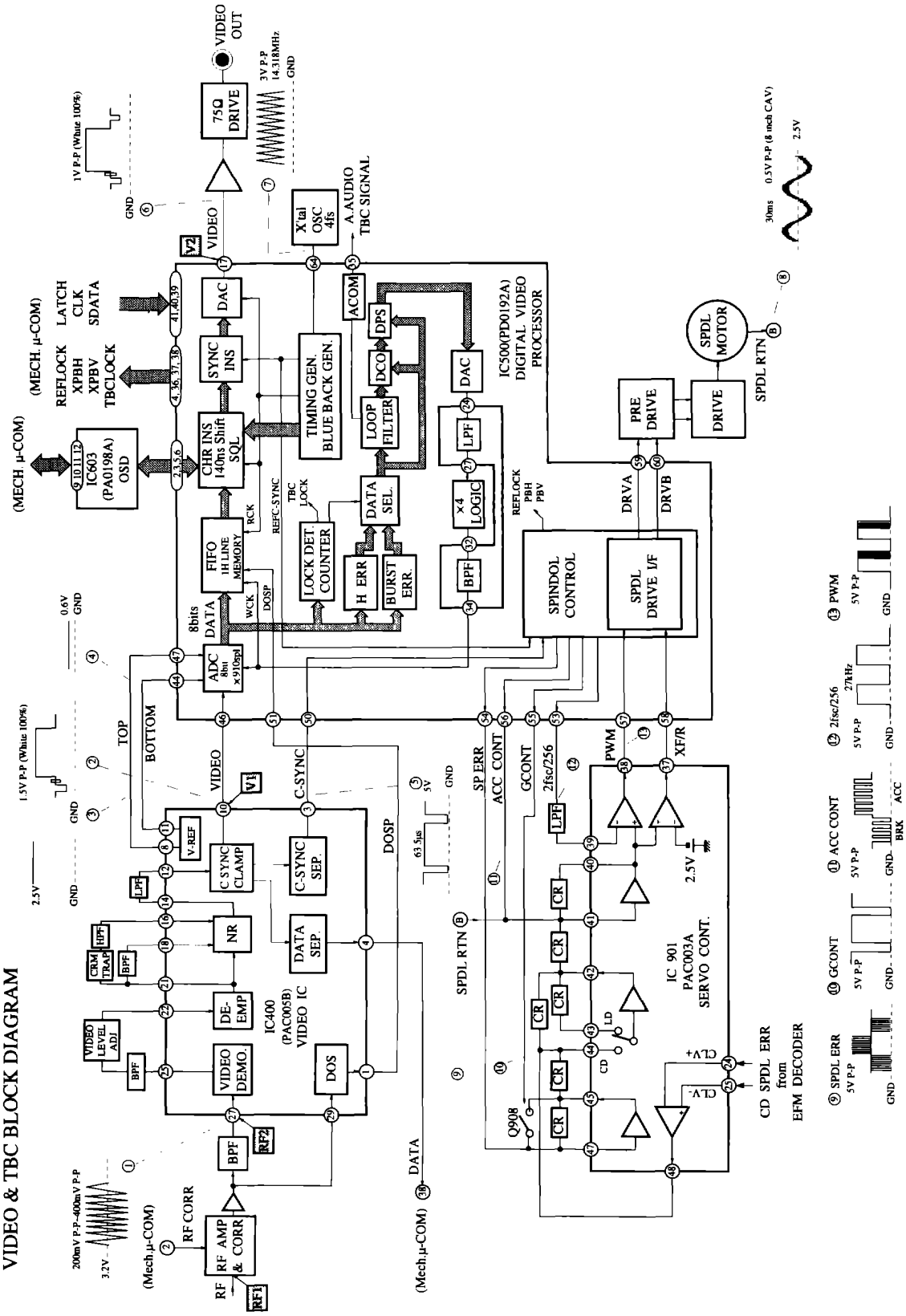
FOCUS SERVO BLOCK DIAGRAM

7.4 TRKG AND SLID BLOCK DIAGRAM

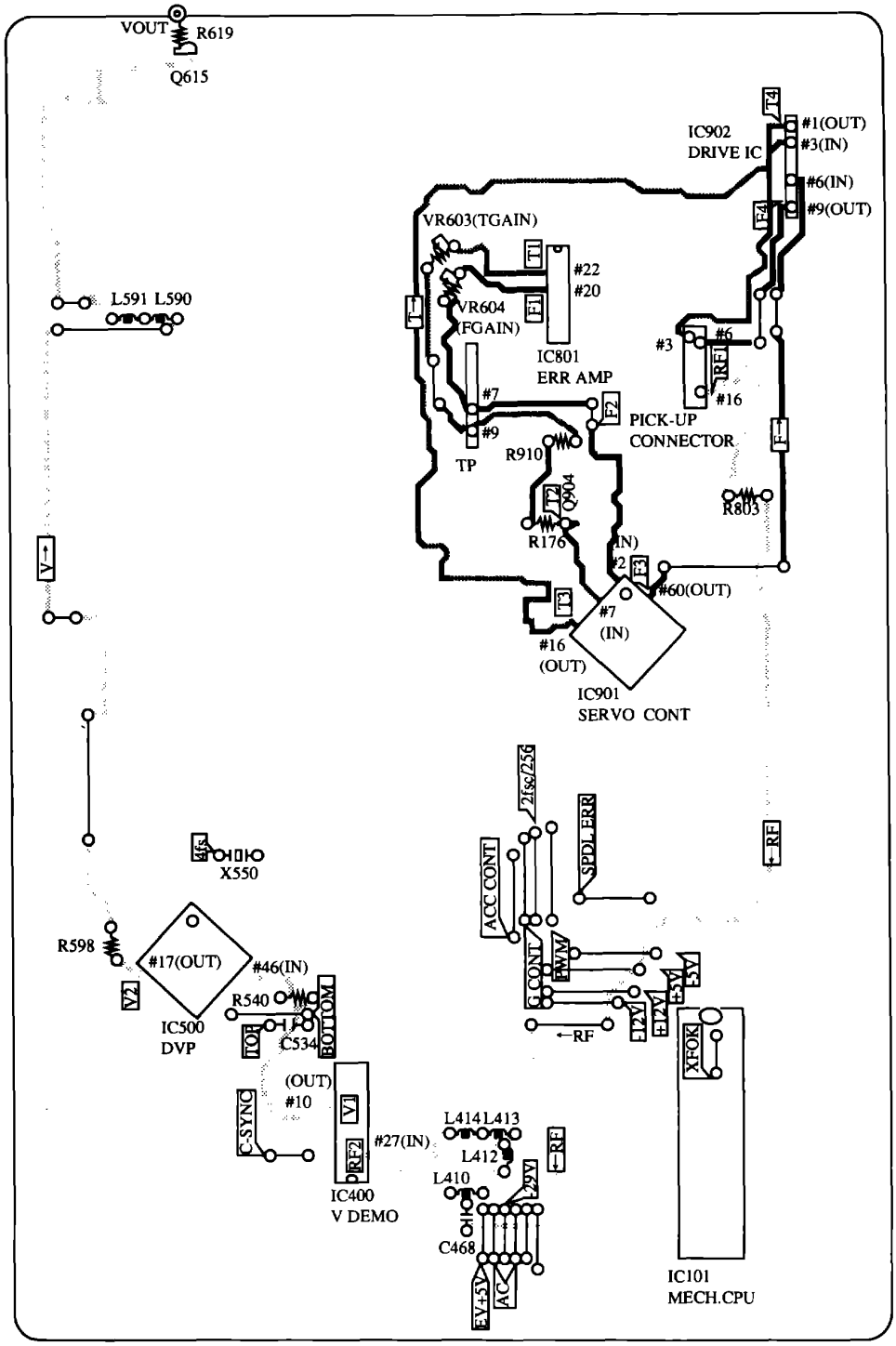
TRKG & SLID BLOCK DIAGRAM



7.5 VIDEO AND TBC BLOCK DIAGRAM



● INSPECTION LAND AND PATTERN (MOTHER ASSY)



F1 is the inspection land for signal check. V1→ indicates the direction of a signal.

FOCUS SERVO system: A signal flows in the order of F1→ F2 → F3 → F4.

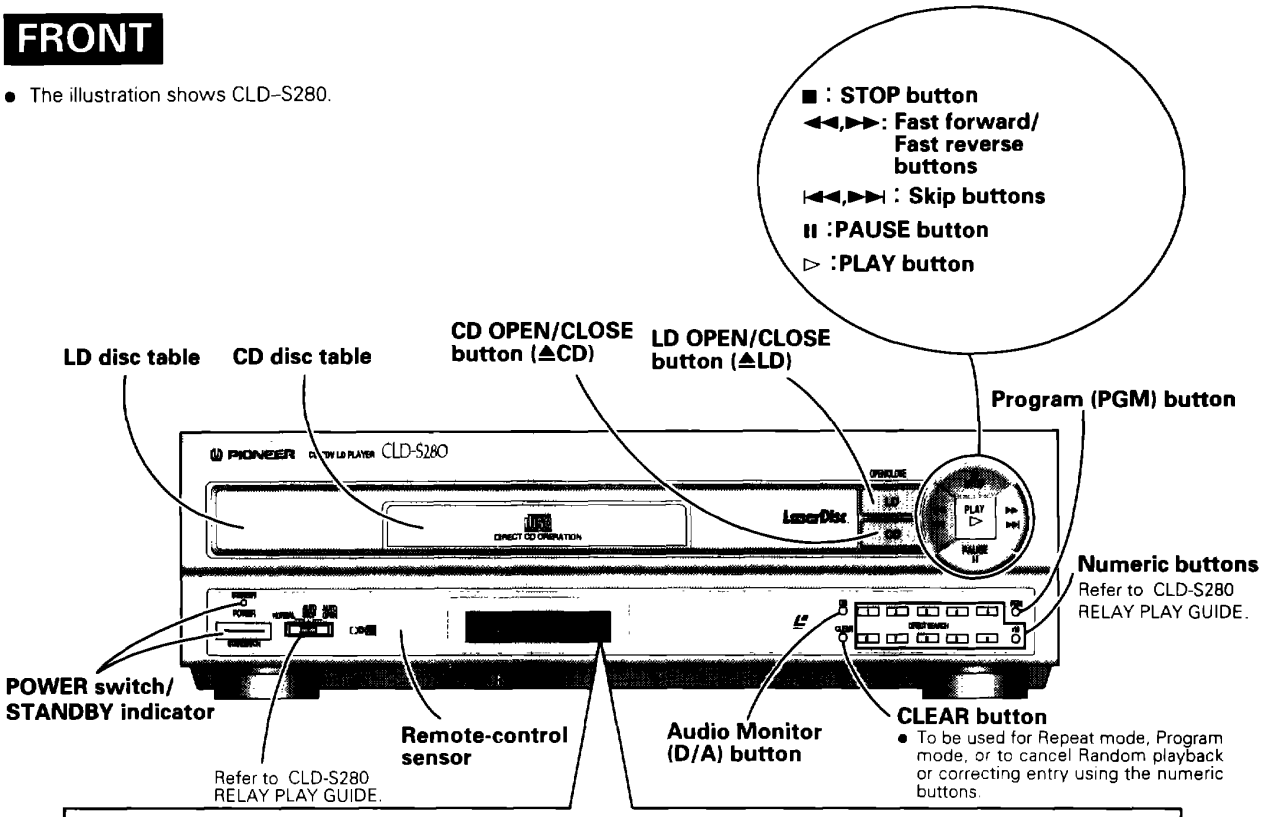
TRKG SERVO system: A signal flows in the order of T1 → T2 → T3 → T4.

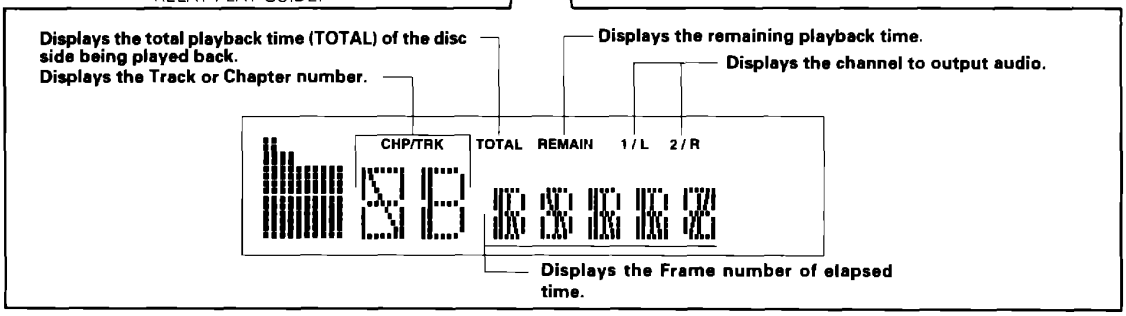
RF VIDEO system: A signal flows in the order of RF1 → RF2 → V1 → V2.

8. PANEL FACILITIES

FRONT

- The illustration shows CLD-S280.


■ : STOP button
◄◄,►►: Fast forward/ Fast reverse buttons
|◄◄,►►| : Skip buttons
II :PAUSE button
▷ :PLAY button
LD disc table
CD disc table
CD OPEN/CLOSE button (▲CD)
LD OPEN/CLOSE button (▲LD)
Program (PGM) button
Numeric buttons
Refer to CLD-S280 RELAY PLAY GUIDE.
POWER switch/ STANDBY indicator
Refer to CLD-S280 RELAY PLAY GUIDE.
Remote-control sensor
Audio Monitor (D/A) button
CLEAR button
• To be used for Repeat mode, Program mode, or to cancel Random playback or correcting entry using the numeric buttons.


Displays the total playback time (TOTAL) of the disc side being played back.
Displays the Track or Chapter number.
Displays the remaining playback time.
Displays the channel to output audio.
CHP/TRK
TOTAL
REMAIN
1/L
2/R
Displays the Frame number of elapsed time.

: Disc table OPEN/CLOSE

: Playback

: Pause

• Displays the functions during operation.

OPEN	: Opens the disc table. Operating
CLOSE	: Closes the disc table. Operating
PLAY	: Starts playback.
END	: End of LD.
INTRO	: Intro Scan
HILIT	: Highlight Scan
RDM	: Random playback
PGM	: Programmed playback
RPT	: Plays back a song repeatedly.
A-B RPT	: Plays back between two points repeatedly.
S-RPT	: Plays back one side repeatedly.
P-RPT	: Programmed Repeat playback
A-RPT	: Random Repeat playback
-OFF-	: Switches the power OFF.
LD	: Laser disc
CD	: Compact disc
CDV	: Compact disc with video
NO DISC	: No disc is on the tray

9. SPECIFICATIONS

General

System ..... LaserVision Disc system and Compact Disc digital audio system
Laser ..... Semiconductor laser: wavelength 780 nm
Power requirements:
Flat blade 2-pin AC plug model ..... AC 110 - 240 V, 50/60 Hz
Round 2-pin AC plug model ..... AC 110 - 230 - 240 V, 50/60 Hz
Power consumption ..... 30 W
Weight ..... 5.7 kg
Dimensions ..... 420 (W) x 387 (D) x 120 (H) mm (Not including protruding cables, etc.)
Operating temperature ..... +5°C to +35°C
Operating humidity ..... 5% to 85% (no condensation)

Video Output (2 pairs)

Output level ..... 1 Vp-p (75Ω when loaded, synchronous negative)
Jacks ..... RCA jacks

Audio Output (2 pairs)

Output level
During analog audio output ..... 200 mVrms (1 kHz, 40%)
During digital audio output ..... 200 mVrms (1 kHz, –20 dB)
Number of channels 2
Jacks ..... RCA jacks

Digital audio characteristics

Frequency response	4 Hz to 20 kHz
S/N ratio	102 dB (EIAJ)
Dynamic range	92 dB (EIAJ)
Total harmonic distortion	0.0055%
Wow and flutter	Limit of measurement (±0.001% W. PEAK) or lower (EIAJ)

Specifications for LDs conforming to EIAJ.

Other Terminals

CONTROL IN ..... Minijack (3.5ø)
CONTROL OUT ..... Minijack (3.5ø) (CLD-S180 only)
RELAY PLAY CONTROL OUT ..... Minijack (3.5ø) (CLD-S280 only)
RELAY PLAY (AUDIO IN/VIDEO IN) ... Both RCA jacks (CLD-S280 only)
VHF adapter ..... Both RCA jacks with DC jack

Accessories

Remote control unit 1
Size-AA (IEC R6P) dry cell batteries 2
Audio cord 1
Video cord 1
Power cord 1
Operating Instructions 1
RELAY PLAY GUIDE (CLD-S280 only) 1
Warranty card 1

NOTE:

The specifications and design of this product are subject to change without notice, due to improvement.